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Introduction/Background: Catheter-Associated Urinary Tract Infection (CAUTI) is a healthcare associated infection that is associated with the placement of an indwelling urinary catheter. In the recent past, CAUTI and other HAIs have come under intense scrutiny since reimbursement policies were changed so health care organizations are not reimbursed for care associated with CAUTI or other HAIs. The participating health system has been able to reduce their number of CAUTI cases but unable reach the goal of zero CAUTIs. **Methods:** Institutional ethnography was the conceptual framework and methodology for this research. Field observations, interviews, and focus groups were employed in this research to understand how the ruling text of the health system organizes nursing practice related to CAUTI in these two intensive care units. A total of five field observations, 10 interviews, and two focus groups were conducted. Interviews and focus groups were recorded verbatim then transcribed. **Analysis:** Transcripts were coded and analyzed using thematic analysis. Three major themes were identified: Nursing Health Education and Training Varies, Foley Catheter Care Ruling Text and Realities of Care, and Complex and Dynamic Work Area and Environment of Care. **Findings:** Analysis of the focus group interviews revealed that although CAUTI nursing leaders had implemented CAUTI best practices, they acknowledged gaps in training and competency. Field observations were used to build a process map for nursing care observed. The care observed was consistent with the ruling text. The ruling text of the health care system

organizes nursing practice related to CAUTI in the ICU setting but did not guarantee consistent behavior or performance. Nursing team members observed providing care did so in alignment with the ruling text. While nursing team members interviewed could speak with alignment to ruling text, they also reported instances where they observed nursing team members providing care that deviated from the ruling text. Nursing documentation in the EHR may result in hidden text and hidden care that potentially makes determining CAUTI root causes more difficult. The nursing team are aware of policies and procedures but not aware of the term ruling text and the potential implications of the ruling text. The ruling text allows for gaps in training, performance, and competency that need to be addressed in order to close care gaps related to CAUTI. **Conclusions:** The ruling text of the health system organizes nursing practice related to CAUTI in the ICU setting of the healthcare organization. The use of institutional ethnography in this study demonstrates its potential as an innovative conceptual framework and methodology for future nursing research.

USING INSTITUTIONAL ETHNOGRAPHY TO UNDERSTAND HOW THE RULING TEXT ORGANIZES NURSING PERFORMANCE RELATED TO CATHETER-ASSOCIATED URINARY TRACT INFECTIONS IN THE INTENSIVE CARE UNIT

by

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CHAPTER I

INTRODUCTION

A urinary tract infection (UTI) is an infection that involves any part of the urinary system, including the urethra, bladder, ureters, and kidneys. According to the National Healthcare Safety Network (NHSN), UTIs are the most common type of healthcare-associated infection seen in healthcare organizations (Centers for Disease Control and Prevention [CDC], 2016). Approximately 75% of UTIs are linked to urinary catheter use, in which a tube is inserted into one's bladder through the urethra to drain urine (CDC, 2016). According to CDC estimates, between 15% and 25% of hospitalized patients receive urinary catheters while hospitalized (CDC, 2016). A major risk factor in developing a catheter-associated UTI (CAUTI) is the extended use of urinary catheters (CDC, 2016). The Centers for Medicare and Medicaid Services (CMS) do not provide reimbursement to healthcare organizations for CAUTIs (Saint et al., 2013); therefore, placing even more of a financial burden on the organization. Considering the frequency and costs associated with CAUTIs, the Centers for Medicare and Medicaid (CMS) established policies and procedures for healthcare organizations to implement to reduce the occurrence of CAUTIs.

The indwelling urinary catheter was invented in the 1920s, followed by the development of the closed drainage system in the 1950s and 1960s (Elvy & Colville, 2009). Studies of UTIs associated with urinary catheterization began to emerge in the

1970s (Elvy & Colville, 2009). The CDC was the first to establish guidelines for preventing CAUTIs dating back to 1981 (Gould et al., 2019). When considering existing research, the literature regarding UTIs and CAUTI is extensive; however, more research is needed in this area because CAUTI continues to be challenging to eliminate in acute care settings.

Substantial research indicates that CAUTI is resistant to prevention and elimination efforts (Mullin et al., 2017). A decrease in CAUTI nationally for 2015 and 2016 was reported, but these decreases coincided with a change in how CAUTIs were being defined and measured. Additionally, these decreases have a relatively flat trend line between 2015 and 2016 (CDC, 2018). The literature demonstrates a need for innovative methods to combat CAUTIs successfully.

Background and Significance

Current Views on CAUTI

The placement of a medical device, an indwelling urinary catheter, is a direct cause of CAUTI. CAUTIs develop as a result of growth of microorganisms or pathogens after the placement of an indwelling urinary catheter. The chances of one experiencing a CAUTI increases when the placement or care of the urinary catheter is performed improperly, with the blame many times placed on the nurse or the nursing team. Registered nurses and nursing team members such as licensed practical nurses, licensed vocational nurses, and certified nursing assistants place, maintain, care for, and remove urinary catheters. For the purpose of this study, the term nurse means a registered nurse, nursing refers to the nursing team including the nurse and the nurse technician. The nurse

technician is a certified nursing assistant with different skill levels as determined by the state board of nursing and the health care system when training and competency are completed. With these duties and responsibilities, nursing is viewed as primarily responsible when a CAUTI develops. CAUTIs are considered a nurse-sensitive outcome as there are many aspects associated with catheter insertion and management that are influenced by the nurse or nursing team (Montalvo, 2007).

While this view seems appropriate given the nurse and nursing team's responsibilities, a clear singular root cause of CAUTI has not been identified in the literature to date. The clear singular root cause lacking in the literature is where in the care of the indwelling urinary catheter the introduction of pathogens occurs and what causes this introduction. Patients admitted with a UTI do not meet the criteria for CAUTI since the pathogens were already present in the urinary system (CDC, 2014). CAUTIs are multifactorial. The lack of a clearly defined singular root cause and the responsibilities of the nurse and nursing team make the decision to blame or to imply the cause is incomplete or inadequate. A lack of clear root causes leads to assumptions or guesses about the actual causes of CAUTIs and demonstrates a gap in nursing knowledge and practice-related CAUTIs.

Evidence-Based Risk Factors for CAUTI

Studies show evidence-based risk factors for the development of CAUTIs are prolonged catheterization, female sex, older age, and impaired immunity (Gould, 2012; Gould et al., 2019; Lo et al., 2014). The main modifiable risk factors for the development of CAUTIs are prolonged catheterization, breaks in the closed drainage system, and

lower professional training of the person inserting the indwelling urinary catheter (for example, a nursing assistant versus a nurse inserting the indwelling urinary catheter would be a risk factor) (Gould, 2012; Gould et al., 2019; Lo et al., 2014). Patient populations who have an increased risk of CAUTI include persons with diabetes mellitus, renal dysfunction, and persons under orthopedic/neurologic services (Gould, 2012; Gould et al., 2019; Lo et al., 2014).

Causes of CAUTI

CAUTIs are caused by the growth of pathogens after the placement of an indwelling urinary catheter. The term pathogen is used to describe microbes that cause disease or infection (Gould et al., 2019). When an indwelling urinary catheter is placed without following strict aseptic technique using sterile equipment, breaks in the sterile closed drainage system, or inadequate peri-care especially following fecal incontinence, pathogens can be introduced into the urinary tract (CDC, 2014; Gould, 2012; Gould et al., 2019). Additionally, patient factors such as women, impaired immune function, older age, low estrogen levels, changes in urethral integrity, dehydration, and urethritis can also increase patient vulnerability to pathogens and risk of developing CAUTI (CDC, 2014; Gould, 2012; Gould et al., 2019). Pathogens then begin to colonize inside the urinary tract resulting in the development of a symptomatic or asymptomatic urinary tract infection (CDC, 2014; Gould, 2012; Gould et al., 2019). While this may sound straightforward, the process from pathogen introduction to colonization is very complex.

After a urinary catheter is placed, proteins begin to adhere to the catheter and the urinary tract resulting in the development of a biofilm (Barford & Coates, 2009). Biofilm

is a complex network of proteins produced by pathogens that allows them to live and thrive (Elvy & Colville, 2009). This biofilm offers pathogens protection from the patient's bodily defenses and even from antimicrobial therapy (Elvy & Colville, 2009). Biofilm allows the pathogens to behave and operate differently as opposed to their behaviors and characteristics when living in a fluid medium such as urine, making them more difficult to identify and to treat (Barford & Coates, 2009). Biofilm production begins immediately following the placement of the indwelling urinary catheter with complete formation varying from patient to patient but ranging from hours to days (Elvy & Colville, 2009). The production of biofilm allows pathogens to survive and grow; however, this advantage is only present as long as the indwelling urinary catheter is in place.

When an indwelling urinary catheter is placed, the body's natural defenses do not operate normally (Barford & Coates, 2009). The indwelling urinary catheter placement allows the normally closed urinary system to remain open, providing ample opportunity for pathogens to invade the urinary system via the urethra and bladder. Pathogens can ascend into the bladder along the outside of the catheter (i.e., extraluminal) or through the inside of the catheter (i.e., intraluminal; Gould, 2012; Gould et al., 2019). Pathogens may also be introduced directly with the initial placement of the catheter since some pathogens normally exist at the urethral meatus but are prevented from advancing toward the bladder by the process of voiding urine and other biological factors (urethral length in men; urethral competence from estrogen effects on urethral mucosa in women) (Gould, 2012; Gould et al., 2019). When the indwelling urinary catheter is placed, these

pathogens may be dislodged from the urethral meatus and relocated along the urethra and the bladder, thereby setting up the development of biofilms along the outside of the catheter. Subsequently, the pathogens multiply and proliferate in the bladder.

Pathogens can cause CAUTIs which are identified as endogenous (i.e., found in the urinary meatal, rectal, or vaginal regions of the host) or exogenous (i.e., located outside the host such as on the hands of healthcare personnel, manipulation of the catheter or drainage system, or breaks in the closed collection system barriers (Elvy & Colville, 2009; Gould, 2012; Gould et al., 2019). The pathogens can be traced to the patient, the healthcare setting, and/or the healthcare personnel providing patient care (Elvy & Colville, 2009). Microorganisms can also vary by the patient's previous exposure to antibiotics, which may create an abundance of one type of pathogen while decreasing the presence of another (Elvy & Colville, 2009). The introduction of a pathogen into the urinary tract and the subsequent colonization by those pathogens result in the development of the CAUTI. Since CAUTI is multifactorial, it is a difficult problem to address.

The criteria for Standardized Infection Ratios (SIRs) were changed in 2015, this changed the criteria for when to perform a culture, but criteria diagnosis of CAUTI is unchanged (Gould et al., 2019). If one presents with an indwelling urinary catheter and shows signs, symptoms, and has conclusive laboratory findings on the day of or the day after admission, they are excluded from being considered or diagnosed as having a CAUTI (CDC, 2014). This is known by the CDC (2014) as "present on admission." If the signs, symptoms, and laboratory findings are not present within the above time frame,

then patient will be diagnosed with a CAUTI, as long as the indwelling urinary catheter was in place or placed between the time of admission and the development of the UTI (CDC, 2014).

Effective January 2015, the National Healthcare Safety Network (NHSN) of the CDC modified the 2013 CAUTI definition (Advani et al., 2017). These changes included removal of the urinalysis criteria, maintaining a urine culture threshold of 10^5 colony-forming units, and exclusion of yeast or mold as potential pathogens (Advani et al., 2017). These modifications to the CAUTI definition and criteria affected the calculation of national and local CAUTI rates. The potential impacts of these changes are discussed further in Chapter II.

The signs and symptoms of CAUTI, or more specifically, symptomatic urinary tract infection (SUTI), are clearly outlined in the literature. The documentation of signs and symptoms, completion of urine cultures, and reporting culture results are vital in the diagnosis of CAUTI. To be diagnosed with CAUTI (SUTI) the patient must meet all of the following criteria:

1. Indwelling urinary catheter in place greater than 2 days on the day the urine culture order placed and was:
    a. Present for any part of the day on the day the urine culture order was placed, or
    b. Removed the day before the urine culture order was placed
2. Has at least one of the following signs and symptoms:
    a. Fever (temperature greater than 38.0 degrees Celsius).

i. For fever to be symptom in patients greater than 65 years of age, the indwelling urinary catheter must be in place more than 2 calendar days on the date the urine culture order was placed

b. Suprapubic tenderness

c. Costovertebral angle pain or tenderness

d. Urinary urgency

e. Urinary frequency

f. Dysuria

3. Urine culture with no more than two organisms identified and at least one of them is a bacterium of greater than 10^5 CFU/ml (colony forming units per milliliter) (Centers for Disease Control and Prevention - Scalise, 2018).

When the urine cultures are ordered this is the start of the infection window period (IWP) (Centers for Disease Control and Prevention - Scalise, 2018). The infection window period is also used to determine if the SUTI is to be considered present on admission. Diagnosing CAUTI is complex and is heavily dependent on laboratory results, following the NHSN criteria, and definitions of CAUTI that are defined by the organization's infection prevention department. The "present on admission" complexities, determining if the patient has a UTI but especially a SUTI when admitted without unnecessary cultures and considering the patient's condition, and the SUTI signs and symptoms documentation make the timeliness of a CAUTI diagnosis problematic. Organizations have been reducing the length of stays due to changes in current reimbursement formulas. Shortened lengths of stay and complex diagnostic criteria

(patient reported signs and symptoms, clinical signs and symptoms, laboratory values, and positive urine cultures) mean patients and healthcare providers may not know who is positive for CAUTI until after the patient is discharged from the nursing unit in which the HAI was acquired. This delay in diagnosis creates problems with determining the root causes of CAUTIs. With the untimely diagnosis process, the problematic resilience of CAUTIs will continue until more objective and timely diagnostic criteria are developed and validated for implemention into practice.

Consequence of CAUTI on Patients

CAUTIs contribute to increased morbidity, mortality, extended length of stay, and increased cost of care (Gould et al., 2019). CAUTIs are the most common type of HAI, making up approximately 30% of nationally reported HAIs and affecting more than 560,000 patients and are associated with approximately 13,000 deaths annually in the United States (CDC, 2016). Additionally, CAUTIs are the leading cause of secondary bloodstream infections known as sepsis. According to the CDC (2016), a 10% mortality rate is seen among patients who develop sepsis caused by CAUTI. Most recently reported data from the CDC (2016) state that CAUTI extends a patient's hospital length of stay on an average of two to four days with an increase in annual health care costs by approximately $500 million.

National Benchmarks for CAUTI

When measuring and comparing an organization's services to other national healthcare organizations, this is known as benchmarking. Benchmarking equips leaders with insight into understanding how their organization compares to similar healthcare

organizations. This type of benchmarking enables the sharing of evidence-based practice outcomes among healthcare organizations at a national level (Davis, 2015). National benchmarks are determined and tracked over time by the CDC and the NHSN. In tracking CAUTIs, a Standardized Infection Ratio (SIR) is a statistic that is utilized at the national, state, and/or organizational level. This statistic is useful in comparing the actual number of CAUTIs in one organization to the number of predicted CAUTIs. That said prediction is an estimate that is based on national baseline data and is risk-adjusted, taking into account that some organizations treat sicker patients in comparison to others (CDC, 2020). From the calculation, if the SIR is 1, this means the number of actual CAUTIs is the same as that of the predicted number, and this is not statistically significant as the findings are in the expected range. If the SIR is less than 1, this shows the number of actual CAUTIs is less than the number of those predicted, these findings are statistically significant, and the organization's performance is better than expected. A SIR greater than 1 indicates that the number of CAUTIs is significantly greater than the number predicted, reflecting that the organization's performance is worse than expected (CDC, 2020). In 2015 the NHSN updated the CAUTI baseline in regards to how the SIRs are calculated as noted above. The CDC (2017) terms this a "Rebaseline" ("What is the 2015 Rebaseline?," para. 1). "The 2015 rebaseline updates both the source of aggregate data and the risk adjustment methodology used to create the original baselines" (CDC, 2017, "What is the 2015 Rebaseline?," para. 1). The risk adjustment "refers to the processes used to account for the differences in risk that may impact the number of infections reported by a hospital, such as type of patient care location, bed size of the

hospital or patient age" (CDC, 2017, "What is the 2015 Rebaseline," para. 1). With the data being risk-adjusted, this makes it possible to compare an organization's performance equally. Currently, the SIRs are adjusted for risk factors, whereas formerly "calculated SIRs had different baseline years for each infection type and facility type" (CDC, 2017, "What is the 2015 Rebaseline?," para. 2).

For the years 2015 and 2016, the national CAUTI SIRs were 0.57 and 0.54, respectively (CDC, 2018). The decrease in CAUTI SIRs in 2015 and 2016 coincides with a change in CAUTI definitions from the NHSN (CDC, 2018). For ICUs during the years 2015 and 2016, the CAUTI trend over time followed the national CAUTI SIRs (CDC, 2018). The CAUTI SIRs for ICUs over the years of 2010 through 2016 were higher than rates for all hospital locations and wards (CDC, 2018). National data reveal the difficulty in eliminating CAUTIs while evidence-based practices have been established for over 30 years.

CAUTI Contributing Factors

The CDC (2020) notes that urinary tract infections (UTIs) are the fifth-most common HAI. A 2015 report estimated that 62,700 UTIs occurred in acute care hospitals (CDC, 2020). In addition, UTIs account for more than 9.5% of infections in the acute care setting. According to a study by Tedja et al. (2015), approximately 66% of ICU patients have or have had an indwelling urinary catheter during their hospitalization. The CDC (2020) reports nearly all healthcare-associated UTIs are due to instrumentation of the urinary tract (insertion of urinary catheters). Complications of CAUTIs are extensive such as "prostatitis, epididymitis, and orchitis in males, and cystitis, pyelonephritis, gram-

negative bacteremia, endocarditis, vertebral osteomyelitis, septic arthritis, endophthalmitis, and meningitis" (CDC, 2020, p. 7-1). These complications cause the patient discomfort, extended hospital lengths of stay, increased healthcare costs, and mortality.

CAUTI and ICU Patients

With every two out of three ICU patients having an indwelling catheter being placed, the risk of CAUTI development among ICU patients appears to be greater than other populations (Tedja et al., 2015). The patients in the ICU setting are also vulnerable to CAUTI due to their unstable conditions and potential for impaired immune response, which supports the need to study CAUTI in the ICU setting as a priority to improve patient outcomes such as morbidity and mortality.

CAUTI-Associated Health Care Costs and Trends

Once a patient is diagnosed with CAUTI, the care associated with the diagnosis is not reimbursable to the healthcare organization. The healthcare organization selected for this research study reports the cost of a single CAUTI case to be estimated at approximately $6,000, according to the organization's Director of Infection Prevention (M. Morgan, personal communication, July 20, 2015). The amount of lost revenue can be significant when the cost of each CAUTI is calculated over a year. The lost reimbursement may also be much higher than the average cost of a single CAUTI diagnosis, depending on whether the patient experienced any of the previously mentioned complications or had an increase in the length of hospital stay. Should a patient develop a complication and/or requires additional lengths of stay due to CAUTI, the associated

healthcare costs are not reimbursed by the insurer. With changing reimbursement models that place a focus on pay for performance, organizations must meet performance measures in order to stay financially viable. Hence, the likelihood of poor patient outcomes and the additional costs of care amplify the importance of preventing and eliminating CAUTIs; therefore, more research is needed in this area.

The participating hospital system reported a decrease in number of urinary catheter days between 2015-2019. The number of CAUTIs was overall low for the system, averaging between six and eight per month. However, the numbers were also very sporadic month to month with no month ever reaching the target of zero cases. Lower numbers and sporadic cases of CAUTIs create a challenge for the organization making it difficult to determine a single contributing factor, in return, making it more difficult to implement a system wide solution.

For this study, ICU-A also had a small number of CAUTIs between 2015-2019, however they also had an increase in the number of catheter days which was contrary to the health system's performance. This ICU was identified by the system as having problems with finding root causes for CAUTIs, implementing interventions to address the root causes and lowering their CAUTI rates.

ICU-B was the other unit that the health system identified as being in need of CAUTI oversight. ICU-B had a decreasing number of catheter days between 2015 and 2019 yet while numbers were overall low, their rates remained stable and did not decrease with the decrease in catheter days. Similar to ICU-A, the overall low numbers

create a challenge for the unit and organization in trying to determine the contributing factors for continued CAUTI in these very ill patients.

Current Best Practice Recommendations

Prevention and elimination of CAUTI is an ongoing challenge. The CDC produced a CAUTI Toolkit which is openly available and well-publicized (Gould, 2012; Gould et al., 2019). These strategies in the Toolkit are supported by scientific evidence and have been found to be feasible strategies for the prevention of CAUTIs (Gould, 2012; Gould et al., 2019). Lo et al. (2014) published CAUTI-prevention guidelines for acute care hospitals. These guidelines were developed by exports in infection control and were supported by CDC data published in 2009. Additional evidence-based prevention guidelines and tool kits are available for nurses in practice. The ANA updated their streamlined evidence-based RN tool focused on CAUTI prevention in 2018 which was informed by the CDC's 2009 recommendations. The Wound, Ostomy and Continence Nursing Society (WOCN Society) partnered with the ANA to develop a CAUTI prevention kit (Lawrence, et al., 2019). The numerous guidelines listing potential solutions to prevention of CAUTI are we well publicized demonstrating the resilience of CAUTI and the complexity of preventing and reducing CAUTIs even with established guidelines and prevention strategies.

Purpose of the Study

The purpose of this study was to describe how the ruling text of the healthcare organization and the participating ICUs organize the behavior and performance of the ICU nursing team in relation to CAUTI.

Research Question

The following research question guided the study: *How does the ruling text of the healthcare organization and the ICUs organize the behavior and performance of the ICU nursing team related to CAUTI?*

Conceptual Framework

Institutional ethnography was the conceptual framework and the methodology for this research. A conceptual framework is a way of looking at a research problem and using different concepts or theories in an integrated manner to understand and explain the subject of interest (Imenda, 2014). Institutional ethnography was chosen because it "explores actual people's activities as they coordinate in those forms we call institutions" (Smith, 2006, p. 13). Institutional ethnography, as described by Smith, "is not meant as a way of discovering the everyday world as such, but of looking out beyond the everyday to discover how it came to happen as it does" (Smith, 2006, p. 3). This framework is appropriate for this study to provide a detailed account of nursing practice in the ICU setting and the explanation of practice development related to CAUTIs.

Smith (1987) developed institutional ethnography as an approach to studying how everyday life is situated and influences the behavior of individuals and groups (Smith, 1987). Smith originally used institutional ethnography as a feminist sociology approach to describe her life as a single mother (Smith, 1987). In her work, all people live and operate as social beings; in social settings that extend to all areas of an individual's life while the rules of society influence their behaviors and relationships (Smith, 1987). Smith used institutional ethnography to describe her life and situation because traditional

sociology approaches and methods did not adequately reflect the actuality of her life as a single mother (Smith, 1987).

In Smith's work, the rules of society are considered the ruling text (Smith, 1987). The rules can be either written or non-written, the rules may be official or unofficial, and they may include societal norms and expected behaviors (Smith, 1987). Institutional ethnography uses the ruling texts to help describe how people behave in relation to the ruling text and to describe the influence of the ruling text on people and society.

Documentation is a form of communication among nurses and other healthcare team members, establishing a record of the care provided and providing legal protection for those involved in the care of the patient. However, from the institutional ethnography perspective, documentation can hold nurses accountable for the care they provide. Documentation can also hide details about the care provided (Smith, 2003) due to the use of flow sheets, either on paper or electronically. Nursing flowsheets in the electronic health record (EHR) allow the nursing team member to check a box to document care was completed in contrast to a narrative note, which provides a more detailed note, but is also time-consuming. The flowsheet has an explanation of what checking the box means or entails if checked, but does not allow for the modification of the care that was provided or care not provided. By checking boxes on a flowsheet, the assumption is that all things represented by the box are completed, but there may be items omitted or completed in a different manner that are not reflected on the flowsheet; therefore, these details are hidden by the documentation. This perspective reflects the dilemma of nursing and the organization because nursing leadership and organization report best practice

recommendations to include practices currently in place while supporting these claims through documentation and chart audits when a CAUTI is identified. However, nursing and the organization have not been able to eliminate CAUTIs altogether. As Smith (2003) stated, nurse's documentation might hide areas of care or interaction that could offer potential solutions or further identify causes of CAUTIs. This perspective from an institutional ethnography lens provides support for the use of this conceptual framework and methodology in order to understand better the nursing team's performance, nursing leadership's perceptions, and the influence of the ruling text on the nursing team.

In a cancer center, Sinding (2010) used institutional ethnography to describe how health disparities occur for women who were being treated for cancer (Sinding, 2010). While performing her research, she was able to discover how assessment forms completed by nurses contributed to cancer disparities. An assessment form is one example of a type of ruling text because the form guides the work of the nurse (Sinding, 2010). Sinding (2010) was able to identify how completing the assessment form without asking more in-depth questions could lead to disparities for individuals with cancer. This study provides an example of how the ruling text of the organization guides the behavior and actions of the nurse and how it can contribute to less than optimal patient care.

In a study by McGibbon et al. (2010), the researchers used institutional ethnography to describe nurses' stress comprehensively and to provide context for nursing stress related to their social setting and the effect of ruling relations on nurses. The researchers sought to identify additional sources of stress of nurses and to describe how the ruling text of the hospital supports the formation of nursing stress (McGibbon et

al., 2010). These researchers were able to use institutional ethnography to provide context and descriptions while identifying additional sources of nursing stress.

In a study by Hamilton et al. (2010), the researchers used institutional ethnography to examine and describe off-peak patient mortality in hospitals. By using institutional ethnography, the researchers were able to identify additional communication challenges, unintended consequences of policy changes, and more accurate ways to collect data (Hamilton et al., 2010). The researchers effectively used institutional ethnography to gain a greater understanding of problems in hospitals by assisting them in making recommendations based on the study's findings.

Campbell (1998) used institutional ethnography to describe how nurses in a long term care hospital were affected by ruling relations and how the decisions made by the hospital administration forced nurses to move from caregiver to administrator. Campbell argued that this transition is contrary to nursing practice and the role of the nurse. The researcher went on to describe how politics and health care policy affect the decision made by the organization in return affecting nurse's decision-making (Campbell, 1998).

The previous studies using institutional ethnography made it an appropriate methodology for investigating CAUTIs since the organization and the ICUs of interest are modern forms of institutions. The healthcare system as a whole is an institution and the ICUs function as smaller institutions, however, having their own rules, norms, and expectations. Institutional ethnography provides the opportunity for the researcher to observe and describe the everyday world of the nurse related to indwelling urinary catheter insertion and care, and in determining how the ruling text of the organization and

the ICUs impact nursing team performance and behavior. The targeted organization and the ICUs had previously stated that they had implemented all of the evidence-based practice recommendations while taking extra precautions to prevent and ultimately eliminate CAUTIs. The organization has reported a decrease in CAUTI cases in general but have not been able to achieve the goal of having zero cases. Previous nursing studies using institutional ethnography have been successful in determining unseen gaps and the effects of the ruling text, therefore further supporting the decision of institutional ethnography as a theoretical framework and methodology to study CAUTIs.

Design

Institutional Ethnography

Institutional ethnography was used to guide the study. Ethnographic methods, such as interviews, focus groups, and participant observation, required the researcher to be with nurses during their normal work activities. In order for the researcher to develop an accurate picture of nursing performance, the researcher established a level of trust with the nursing team in order to observe their activities without influencing their performance.

Assumptions

The study had the following assumptions: current CAUTI best practice guidelines are in place and being followed by the nursing team in the target ICUs, the nurses and nursing team will display usual work practices and behaviors while being observed by the researcher. The researcher does not have any conflict of interest or issues that would affect objectivity when conducting this study.

Definitions

Acute Care Setting—A hospital or setting that provides care for inpatient, surgical, or acute conditions and injuries that require typically short-term care and/or treatment (Centers for Medicare and Medicaid Services [CMS], 2015).

Catheter Days—The daily count of patients who have an indwelling urinary catheter. The daily total of patients with an indwelling urinary catheter is totaled for the month and equals the catheter days for the month (Healthcentric Advisors, 2017).

CAUTI—This study used the CDC (2020) definition of CAUTI which is symptomatic urinary tract infection (SUTI) where an indwelling urinary catheter was in place more than 2 days in an acute care setting, and the indwelling urinary catheter was inserted on day 1 of the acute care stay, and/or in place the day before the UTI.

CAUTI rate—This is an incident rate that is calculated by dividing the number of CAUTIs meeting set criteria by the number of catheter days and then multiplying that by the constant (k) or 1,000 equaling the rate of infection (Healthcentric Advisors, 2017).

Indwelling Urinary Catheter—A tube that is inserted into the urinary bladder through the urethra. These devices are also referred to as foley catheters (CDC, 2020).

Ruling Text—The observed or experienced processes that occur in daily life, social settings, or institutions, and are local or trans-local (Smith, 2006).

Summary

CAUTI is an HAI, which is often the result of improper placement and/or care of the urinary catheter. The etiology of CAUTI is multifactorial, and identifying potential solutions to prevent and eliminate CAUTI have been elusive. Nationally, the numbers of

CAUTI cases have not seen significant drops, with the last data reported showing an increase in these cases. The evidence-based practice guidelines for CAUTI are well documented and easily accessible from national organizations such as the ANA, CDC and WOCN.

CAUTI is a significant problem in healthcare organizations that has serious implications for patients, including increased morbidity, mortality, and length of hospital stay. CAUTIs increase the cost of healthcare for the patient, the system, and overall, the nation. CAUTI is considered a nurse-sensitive indicator and is attributed to improper nursing care.

Nursing and healthcare organizations may not be able to achieve their desired goals related to CAUTIs unless new and innovative research methods are used to study the link between nursing performance and CAUTI. This research used an innovative approach, utilizing institutional ethnography to effectively study the everyday world of nursing in two ICU settings. Furthermore, this study aims to describe how nursing teams perform and how nursing teams are affected by the ruling text related to the care provided by nursing teams for patients with an indwelling urinary catheter. Since CAUTIs have significant patient and financial impacts, more research is warranted in identifying the potential causes and solutions to prevent and eliminate CAUTIs. In exploring this further, utilizing institutional ethnography is an appropriate and promising theoretical framework and methodology for CAUTI research.

CHAPTER II

LITERATURE REVIEW

Introduction

CAUTI is not a new problem in the healthcare arena. Best practices to prevent CAUTIs are well known and backed by organizations such as the CDC and NHSN. This review of the literature will synthesize current literature in relation to CAUTI prevention specific to the ICU setting.

Purpose and Methods

The matrix method for literature review was utilized to investigate prevention techniques used to prevent CAUTIs in healthcare organizations with a specific focus on the ICU setting. This method by Garrard (2011) was utilized to provide a comprehensive review of the current literature.

This literature review utilized the following electronic databases: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and EBSCO Complete Database. The search terms included in the review used the following keywords: “healthcare-associated infection,” “hospital-acquired infection,” “acute care,” and “catheter-associated urinary tract infection,” “CAUTI,” “intensive care unit,” “ICU,” “nurses,” and “nursing.”

The inclusion criteria for this review included: (a) original research based on primary sources, (b) conducted in the United States since 2015; studies were limited to

the United States since healthcare organizations and nursing role vary internationally, (c) published in the English language, and (d) research focused on the adult patient population in the ICU setting. The timeline for the literature search was 2015 to June of 2020 because these studies better represent the most recent evidence on CAUTIs. Exclusion criteria included studies in long-term care settings, literature reviews, evidence-based practice recommendations, practice recommendations without a supporting study, and/or studies outside of the United States. Long-term care settings were excluded because patients in these settings typically have longer lengths of stay than those experienced in the acute care setting. They also have patients who have indwelling urinary catheters on a long-term basis, which is a different set of problems, and are beyond the focus of this research. Literature about evidence-based practice recommendations or practice recommendations without a supporting study or evidence were excluded because they reiterate research and study findings; these are not primary studies. Research conducted outside of the United States was excluded because these healthcare systems and settings can be vastly different when compared to the healthcare system in the United States.

The literature search underwent an initial screening. Search results from electronic databases were screened by reviewing the titles and abstracts to determine if the article met inclusion criteria. Articles meeting the inclusion criteria on the initial screening were then read in more detail to determine if inclusion criteria were met.

Articles meeting the initial review and inclusion criteria were placed into a literature matrix created in Microsoft Excel in order to facilitate review and synthesis

(Garrard, 2011). The column headings in the literature matrix were author, title, journal, publication date, volume, issue, pages, purpose/questions, concepts/variables definitions, relational statements, theories, concept operationalized, design methods, sample characteristics, treatment/interventions, findings, comments, and other.

Literature Review Results

The literature review of studies resulted in a total of 32 articles being selected for the initial review. After reviewing these further, a total of 17 articles met the inclusion criteria. The majority of studies (*n*=13) used an intervention design. Four of the studies utilized a retrospective analysis.

This integrative literature review sheds light on various CAUTI prevention measures used in acute care settings in the adult patient population in the United States. The following sections will concentrate on the two areas from the literature review, which are intervention design studies and retrospective analysis.

Intervention Design Studies

Intervention design studies are studies where the researcher(s) design and/or implement an intervention then evaluate the effects or results of the said intervention. These 17 studies are reviewed, synthesized, and discussed below.

Underwood (2015) conducted a study with the Comprehensive Unit-Based Safety Program (CUSP) which included education about urinary catheter care and maintenance, insertion techniques, prompt catheter removal, documentation, and when to obtain and send urine cultures which aligned with CDC recommendations. The results of the study demonstrated a statistically significant decrease in total catheter days (*p*=0.001) and

decreased catheter utilization (catheter days/patient days) (p=0.001). The researchers also reported a 19% decrease in the number of CAUTIs during the study, but this was not a statistically significant change. This study demonstrates how the implementation of standardized protocols can help reduce CAUTIs.

In a study by Thomas (2016) to reduce CAUTIs in a cardiac intensive care and step-down unit. A nurse-led evidence-based practice change design was used to implement this quality improvement (QI) project (Thomas, 2016). The project was guided by Wick's Check-Plan-Do-Check-Act (CPDCA) model of continuous QI (Thomas, 2016). The CPDCA model requires identification of the problem, developing a plan, implementation of the plan on a small scale, monitoring results, then determining how the results influence policy and procedure at the institutional level (Thomas, 2016). Following the intervention, a statistically significant change in CAUTIs (p=.009) and CAUTI occurrences (p=.005) was observed (Thomas, 2016). There was no significant difference in the number of indwelling catheter days and indwelling catheter utilization following the implementation of the changes. However, the nurse compliance rate with the intervention was reported at 91%. Additionally, there was an improvement in CAUTI occurrences. This study demonstrates how nurse-led evidence-based practice can be a successful strategy to improve CAUTIs.

In a study by Epstein et al. (2016), researchers reviewed policies and procedures for CAUTI prevention, focusing on patients in the ICU. The researchers then identified an issue with urine culturing practices, which resulted in unnecessary and duplicate urine cultures of ICU patients. The researchers implemented a urine culture protocol, which

specified the criteria when urine cultures should be performed. The implementation of the protocol resulted in a statistically significant decrease in urine culturing in all ICUs in the study ($p < 0.001$) (Dicks et al., 2016; Epstein et al., 2016). The researchers also reported statistically significant downward trends in CAUTI rates across all ICUs ($p = 0.04$) (Epstein et al., 2016). The device utilization ratio (catheter days/patient days) did not appear to impact CAUTI days, as the researchers had expected, since the protocol was focused on urine cultures and not on indwelling urinary catheter utilization. This study demonstrates the importance of urine culturing protocols to reduce unnecessary urine cultures, which can potentially improve CAUTI occurrences.

Dicks et al. (2016) conducted a study in a community hospital ICUs to decrease HAIs. The study was conducted in 33 hospitals, which were part of an infection prevention network. The researchers used an intervention of chlorhexidine gluconate (CHG) bathing for patients in the ICU, with 17 of the 33 hospitals implementing the intervention. CHG is an anti-microbial cleaning solution used for bathing and skin prep prior to surgical procedures (Dicks et al., 2016). The researchers reported the CHG bathing did statistically reduce Methicillin-resistant Staphylococcus aureus (MRSA)-CAUTI incidence ($p < .001$) and all MRSA-HAIs ($p < 0.001$) (Dicks et al., 2016). The researchers also reported statistically significant reductions in Vancomycin-resistant enterococci (VRE)-CLABSI ($p = 0.01$) (Dicks et al., 2016). The research data for CHG bathing hospitals and control hospitals demonstrated non-species specific CAUTI ($p < 0.001$), CLABSI ($p = 0.004$), BSI ($p < 0.001$), and VAP ($p = 0.02$) were lower than the hospitals using CHG bathing and were statistically significant (Dicks et al., 2016). This

research demonstrates that CHG bathing for ICU patients appears to be beneficial for HAI outcomes including CAUTI and are specific to causative organisms. The results also demonstrate no difference in the control group in HAI outcomes compared to the intervention group in the non-species-specific causes of HAI. This research demonstrates the potential for improving HAI outcomes with CHG bathing when targeted at specific populations.

In a study by Mullin et al. (2017), the researchers developed and implemented protocols based on the CDC clinical practice guidelines with the goal of reducing CAUTIs in the ICU setting. The researchers also used guidelines from the American College of Critical Care Medicine and Infectious Disease Society of America to evaluating fever in critically ill patients to change urine culture practices (Mullin et al., 2017). The culturing guidelines were accepted by all ICUs resulting in a standardized approach to urine cultures (Mullin et al., 2017). The study results showed a statistically significant decrease in CAUTI rates from 3.0 in 2013 to 1.9 in 2014 ($p = 0.0003$) (Mullin et al., 2017). The results also demonstrated a decrease in urine cultures over the intervention period, from 4,749 to 2,479, which corresponded to the decrease in CAUTI rates; however, no statistical significance was reported (Mullin et al., 2017). The study demonstrates national recommendations can potentially reduce CAUTI rates and unnecessary urine cultures when implemented by healthcare organizations.

In a study by Gupta et al. (2017), researchers implemented an intervention to decrease the duration of indwelling urinary catheters and CAUTI rates in one ICU. The intervention included education for staff about preventing CAUTIs and implementing

three protocols, including criteria for inserting, maintaining, and removing indwelling urinary catheters. The results of the study showed a decrease in CAUTIs, along with a decrease in catheter utilization. This study demonstrates educational interventions and protocols for appropriate catheter use that can improve indwelling urinary catheter usage while decreasing CAUTI rates.

In a study by Scanlon et al. (2017), the researchers implemented interventions at one hospital in the ICU and non-ICU areas. The interventions included CAUTI ambassadors, a CAUTI algorithm, a CAUTI carnival, and CAUTI rounds. These interventions entailed staff education, best practice algorithms, and rounding for appropriate care when considering the use of indwelling urinary catheters. Rounding is the act of walking around to the patient's room with nursing leadership and nursing staff to observe the patient, ensure policies, procedures, and protocols are being followed, and to educate nursing staff as needed. The results of the study demonstrated a reduction in CAUTI rates of 28% after year one and 81% at the end of the 18-month study period (Scanlon et al., 2017). The researchers did not report statistical significance. This study sheds light on the potential of education, evidence-based practice, and staff engagement to decrease CAUTIs.

Richards et al. (2017) conducted a study utilizing nurse-implemented strategies to decrease CAUTI rates in a neurological ICU. The interventions included conducting chart audits to determine appropriate indicators for indwelling urinary catheter placement, documentation related to the continued need of the catheter, and a root cause analysis of CAUTI cases. The interventions also included ongoing education for staff on CAUTI

prevention, purchase and use of products to prevent skin breakdown, and recognizing and rewarding staff who were compliant with interventions. The researchers reported the interventions resulted in a reduction of CAUTIs (15 cases in 2014), which was statistically significant ($p < 0.05$) (Richards et al., 2017). This study demonstrates evidence-based nursing interventions, education, use of a reward system, and recognition of staff can potentially decrease the number of CAUTIs in the neurological ICU setting. This research also supports evidence-based practice guidelines and education as strategies which can change nursing care provided and behaviors.

Ferguson (2018) conducted a QI study to determine the results of a CAUTI education program implemented in two nursing units in an acute care hospital following 59 nurses over a 3-month period. Paired *t*-tests showed the nurse's knowledge summary score significantly increased in all three CAUTI knowledge subscale scores (all $p = 0.00$) (Ferguson, 2018). Additionally, during the quarter following the implementation of the study, the researcher reported a decrease in CAUTI rates in both units. CAUTI rates in unit one went from 7.49 to zero per 1,000 catheter days. CAUTI rates in unit two went from 4.12 to 1.56 per 1,000 catheter days (Ferguson, 2018). This study demonstrates a CAUTI educational program is potentially an effective intervention to increase nurse's knowledge of appropriate indwelling urinary catheter care, which can potentially decrease CAUTI rates. This study supports the relationship between education and nursing performance.

In a study by Bardossy et al. (2018), the researchers used an education intervention for ICU teams, including resident physicians and nurses. The intervention

also included chart audits for placement and maintenance of catheters and monitoring urine culture use in two teaching hospitals in adult ICUs. The results of the study demonstrated both hospitals were able to decrease urine cultures per 1,000 patient days ($p < 0.0001$) (Bardossy et al., 2018). The study results also show positive urine cultures increased but were not statistically significant. The results further documented a reduction in CAUTI rates for one hospital and an increase in CAUTI rates for the other hospital but were not statistically significant. This study demonstrates potential reductions in CAUTI rates following an educational program for physicians and nurses. The purpose of reducing urine cultures is to prevent unnecessary cultures of a patient's possibly normal flora. Culturing a patient's normal flora may identify pathogens that are not causing signs and symptoms but will be attributed as a CAUTI. This identification of CAUTI based on a patient's flora is a false identification, according to current definitions, and therefore impacts CAUTI outcomes, nursing performance, and the overall healthcare organization's outcomes and performance.

Shaver et al. (2018) conducted a research study in emergency departments and in trauma/surgical and medical ICUs in one healthcare system. The study used an educational intervention in collaboration with indwelling urinary catheter manufacturers for bedside nurses. The manufacturer conducted indwelling catheter product and simulation training for healthcare system trainers (Shaver et al., 2018). The healthcare system trainers were designated Best Practice Champions to disseminate education to bedside nurses (Shaver et al., 2018). To evaluate the program, researchers conducted pre- and post-education surveys and observations of bedside nurses before and after education

(Shaver et al., 2018). The results of the study demonstrated the post-education survey results scores were higher (86.9 ± 8.3%) which was statistically significant using a paired t-test ($p = 1.03 \times 10^{-7a}$) (Shaver et al., 2018). The study also measured pre- and post-attitude or agreement with current indwelling urinary catheter care standards and reported result post-survey increase (91.3 ± 7.0%) which was not statistically significant ($p = 0.16$) (Shaver et al., 2018). The study also demonstrated the observations of maintenance improved especially with the use of a clip to secure the catheter bag (10.7%-61.5%) and keeping the urinary drainage bag off the floor (41.1%-100%) but statistical analysis was not reported (Shaver et al., 2018). This study demonstrates the potential positive impact of educational interventions on CAUTI prevention.

Tyson et al. (2018) implemented interventions including nurse-driven protocols for indwelling urinary catheter removal, silver-coated urinary catheters, education for staff, twice daily indwelling urinary catheter care, and nurse-driven assessments of indwelling urinary catheter needs in a surgical ICU. The results of the study revealed a statistically significant decrease in CAUTI rates when comparing the pre-intervention and post-intervention periods ($p < 0.01$) (Tyson et al., 2018). The study also noted a statistically significant decrease in the indwelling catheter utilization rates ($p < 0.05$) (Tyson et al., 2018). This study demonstrates the potential for multi-faceted interventions to improve CAUTI rates and improve indwelling urinary catheterization utilization rates.

Van et al. (2020) conducted a study to determine the relationship between a nursing staff directive, nurse staffing trends, and HAIs. The Veterans Health Administration Office of Nursing Services issued a Staffing Methodology Directive in

2010. The directive standardized the methods used to determine the appropriate nurse staffing for the Veterans Health Administration (VHA) facilities, a multi-level interrupted time series analysis. Researchers examined the trends in nurse staffing of two HAIs before and after the Directive. The population areas included in the analysis of infection rates were acute care, critical care, mental health acute care, and long-term care nursing units in VHA facilities. Acute care (medical-surgical units) and critical care units were used in the analysis of infection rates. Researchers reported during the implementation of the Directive, nursing hours per patient day increased. The differential change, however, was not statistically significant. There was a statistically significant decrease of 0.05 in the CLABSI rates (staffing post-slope differential = -0.06; $p < .05$) (Van et al., 2020). Although there were no differential changes in the association between staffing and CAUTIs, the researchers reported an overall decrease in CAUTI rates with increased nurse staffing levels (Van et al., 2020). This study suggests that increased nurse-staffing levels could have a positive effect on HAIs and potentially improve HAI outcomes.

Retrospective Studies

Retrospective studies were identified in the literature review and included in the literature synthesis. Retrospective studies examine data collected over a specified time period in the past to evaluate an intervention, event, and/or population. The studies included in this literature review were used to study national changes of the CAUTI definition, at-risk populations, and CAUTI prevention bundles.

Neelakanta et al. (2015) performed a retrospective cohort analysis of ICU patients in a 2,000-bed healthcare system. The researchers examined the records of ICU patients

who were previously diagnosed with CAUTI. The researchers examined CAUTI diagnosis with the updated 2013 NHSN CAUTI definition. The results of the study demonstrated a statistically significant higher number of physician-diagnosed infections that were not CAUTIs ($p < 0.001$) (Neelakanta et al., 2015). The researchers also reported the 2013 NHSN CAUTI definition changes resulted in the CAUTI rate doubling, and more than half of the cases had fever sources other than urinary tract infection (Neelakanta et al., 2015). This study demonstrates the importance of CAUTI definitions and how these definitions can influence CAUTI incidence and reporting. This research also supports national definitions as the ruling text for healthcare organizations, which in turn can be implemented as the ruling text for nursing units.

Tedja et al. (2015) examined the relationship between urine cultures and fever in the ICU to diagnose CAUTI. The researchers conducted medical record reviews to understand better if fever indicated a need for urine cultures to diagnose CAUTIs (Tedja et al., 2015). The study results suggest when fever is present in an patient, urine cultures and other cultures should be conducted in order to determine the origin of the fever (Tedja et al., 2015). Since fever is common among ICU patients, fever can trigger increased urine cultures with potential pathogens present(Tedja et al., 2015). The results of the chart reviews revealed an increase in pathogen identification in culture results which is one of the criteria to identify CAUTI (Tedja et al., 2015). The increase in pathogen identification and fever falsely elevate the number of clinically significant number of CAUTIs, indicating that fever is not a good indicator of CAUTI (Tedja et al., 2015). This study recommends further research to better understand the non-specific

relationship between fever and bactieruria (Tedja et al., 2015). This study demonstrates the complexity of CAUTI diagnosis and clinical decision making when treating and trying to prevent and reduce CAUTI.

Hagerty et al. (2015) discovered that patients with subarachnoid hemorrhage in a neurologic ICU who were older, hyperglycemic, and had anemia requiring transfusion were more likely to develop a CAUTI. This study demonstrates how a retrospective study can be used to identify specific populations who are at risk of developing a CAUTI. These findings can then potentially be used to develop interventions specific to a given population and/or make nurses aware of the increased risk in hopes of improving CAUTI prevention efforts and CAUTI surveillance. This research supports the potential development of new protocols and guidelines for specific populations, which is considered a form of ruling text for nursing units.

In a study by Advani et al. (2017), researchers performed a retrospective analysis of CAUTI surveillance data from seven ICUs to determine the impact that national CAUTI definitions have on CAUTI rates. The researchers reported CAUTI incident rates after definition changes for CAUTI were applied. These rates decreased the incident for years prior to the definition change ($p = 0.001$) (Advani et al., 2017). Researchers also reported a decreasing trend year by year for UTI rates that was statistically significant ($p < 0.001$) (Advani et al., 2017). Near the beginning of the time period studied, a CAUTI prevention bundle was implemented in the ICUs. The study demonstrated a 50% reduction in reportable CAUTIs with CAUTI definition changes but this reduction also occurred during the positive effect of the prevention bundle (Tedja et al., 2015). This

study demonstrates revised CAUTI definitions resulted in a more accurate definition of CAUTI that resulted in reduction reportable CAUTI cases showing the importance of CAUTI definition and criteria. This study supports prevention bundle interventions can result in positive reductions of CAUTIs in the ICU.

Discussion

The studies identified and included in this literature review help to illustrate the current state of knowledge related to CAUTIs in the ICU and acute care settings. Understanding the current state of knowledge is essential to understand the research topic and to perform research that contributes to the body of knowledge of the research topic. The intervention design studies reviewed generally demonstrated intervention studies that were successful in reducing CAUTI rates, improving nurse's understanding of CAUTIs, preventing CAUTIs, improving nursing compliance with CAUTI bundles, and overall CAUTI reduction and prevention performance. The majority of the intervention design studies had statistically significant results adding strength to the study findings. The remaining studies did not have statistically significant results but did report positive results, which improved CAUTI data, performance, and outcomes.

The retrospective analysis studies demonstrated how changes in national CAUTI definitions resulted in reported reductions of CAUTI rates and reported improvement of CAUTI performance. The retrospective analysis studies also demonstrated potential overuse of urine cultures in ICU patients with a fever might contribute to artificially elevated CAUTI rates. One retrospective study identified a specific ICU population with an increased risk of CAUTI. These retrospective studies were able to demonstrate the

value in using research to explore historical data and changes to understand the current state related to CAUTI, nursing, and the ICU setting. This literature review demonstrated successful interventions that were implemented by healthcare providers to address CAUTI, increase nursing knowledge of CAUTI, prevent CAUTI, and/or improve CAUTI performance. This literature review demonstrated retrospective analysis of CAUTI revealed the impact of definition changes on reported CAUTI data, increased urine culturing, and specific populations with a higher risk of developing a CAUTI. The review of the literature reveals interventions to reduce CAUTI rates, prevent CAUTI, and improve nursing knowledge are generally successful and should be considered by healthcare providers seeking to improve CAUTI and nursing performance for ICU populations. The literature reveals how retrospective analysis of CAUTI data can identify at-risk populations, questionable CAUTI practices, and the impact CAUTI definitions have on reported CAUTI cases as well as nursing performance in the ICU. Finally, the literature review sheds light on various tools, guidelines, protocols, education, training, rounding, and reminders, which support the ruling text (written, verbal, or visual) to change nursing care provided and behaviors to those desired. The implementation of these forms of ruling text appears to have changed nursing care provided and behavior, which resulted in decreased occurrences of HAIs and CAUTIs as well as performance and outcomes.

Gaps in Knowledge

The literature review assisted in identifying gaps and overlaps in the state of CAUTI knowledge. These gaps and overlaps help to justify the need for this study and

support the goals and method of the proposed study. First, the definitions of CAUTI and measuring methods as defined by the CDC and NHSN were changed in 2015 and resulted in improved reported CAUTI rates nationally. This change in definitions addresssed a gap between the previous definition and the current definition. This change in the definition may also demonstrate the current definition is a more accurate reflection of the clinical definition of CAUTI given new evidence. Second, the implementation of best practice recommendations or guidelines provides guidance to healthcare organizations on the prevention of CAUTI, but these recommendations do not take into account or address the complexities of individual patients, providers, units, and hospitals. The research studies identified showed that CAUTI performance could be improved in their units and hospitals using best practice recommendations along with a custom-tailored approach to fit their healthcare setting and target population. However, the existence of well-publicized best practice recommendations from credible sources may limit further inquiry and deeper understanding of HAIs, CAUTIs, and nursing care since the solution to the CAUTI problem are assumed to be known.

The literature review revealed intervention studies and retrospective analysis of CAUTI data that can improve CAUTI performance and identify a new understanding of HAIs and CAUTIs, but does reveal gaps in knowledge. One of the first potential gaps revealed is the lack of understanding about how best practice guidelines influence nursing practice in the ICU in relation to CAUTI. Best practice guidelines are supported as a form of ruling text. While one study reported the use of rewards and recognition to support the ruling text and desired change in nursing care and behavior, however, none of the studies

identified revealed how these guidelines or ruling text influence nursing practice. The literature review identified perspectives about nursing practice in the acute care setting related to HAIs and CAUTIs explored through the lens of nursing documentation. When nursing documentation is incomplete, this can lead to nurses being potentially and wrongfully identified as a source of HAIs and CAUTIs. However, the view of nursing practice through documentation does not seem to exonerate the nurse if documentation is complete and CAUTIs still occur. The nursing documentation is used to demonstrate nursing compliance with policy, procedure, guidelines, and protocols, all of which are examples of the ruling text. These gaps require a better understanding of nursing practice in the acute care setting, especially ICUs, related to HAIs and CAUTIs based on the actual nursing care provided, whether the actual practice may be contributing to CAUTI, and what influence best practice guidelines or policy and procedures have on nursing practice in the acute care setting, especially ICUs, related to CAUTI. The longest sustainment of CAUTI elimination reported in this review was one year. The gap identified between nursing practice, nursing documentation, and the influence of the ruling text such as guidelines, protocols, policy, procedure, education, and training will be the focus of this study.

Summary

The literature review revealed that efforts to reduce and prevent CAUTIs have been somewhat successful with research conducted at the local level along with using approaches suited to the particular setting and population. The review reveals there is no one solution to reducing and eliminating CAUTIs, and while studies have been shown to

improve the performance and outcomes, long-term sustained results or elimination of CAUTIs have not been reported. The literature also reveals a potential gap in nursing practice, nursing documentation, and healthcare policy and procedure that may not reflect the reality of nursing practice in the ICU. This gap indicates further scientific inquiry is needed to understand the reality of nursing practice versus nursing documentation, how evidence-based practice and policy and procedures influence nursing practice in the ICU in relation to CAUTIs. Without further scientific inquiry, this gap may continue to exist and potentially reduce the opportunities of eliminating CAUTIs and potentially other HAIs in the acute care setting.

CHAPTER III

METHODOLOGY

A review of the literature identified the prevention strategies for CAUTI are well-publicized; however, little is known about how these prevention guidelines organize nursing team performance and behavior in the ICU setting. The literature review also identified interventions in CAUTI performance across ICU settings but did not describe how these improvements or interventions organized nursing team behavior and/or performance to achieve these results. This chapter provides the study research question, study design, methods, and study limitations.

Research Question

The following research question guided the study:

1. How does the ruling text of the healthcare organization and the ICUs organize the behavior and performance of the ICU nursing team consisting of registered nurses and nurse technicians relate to CAUTI?

Study Design

The study design was a descriptive qualitative method using institutional ethnography. Institutional ethnography is a methodology that describes how people or groups operate in a social setting and describes their actions and behaviors in relation to the ruling texts associated with the social setting (Vukic & Keddy, 2012). Healthcare is a social setting with numerous groups operating and interacting together to complete a

common goal of delivering quality health care. This study focused on nurses and nurse technicians who worked as part of the nursing team in an intensive care setting (ICU), responsible for the nursing care for patients with indwelling urinary catheters.

The actions, behaviors, and care provided by the nursing team are ruled and influenced by the ruling text of the health care system and hospital (Smith, 2003). The ruling texts are the policies, procedures, and guidelines which dictate how the nursing team will perform patient care to include placement, care, and removal of an indwelling urinary catheter. The ruling text of the healthcare system also determines the methods, definitions, and procedures for CAUTI diagnosis, how this communicated to the nursing team, who is responsible, and the actions to be taken as a result of a CAUTI being diagnosed. The ruling text of the healthcare system and nursing units were obtained from the system-wide clinical nurse specialist who is responsible for tracking CAUTI performance. The ruling text related to CAUTI definitions were obtained from the infection prevention nurse for the healthcare system who is responsible for CAUTI performance monitoring and reporting for the healthcare system. These documents were used as a reference and referred to during data collection and analysis.

Setting

This study was conducted in a health system located in the southeastern United States. The health system comprises five hospitals: four hospitals provide medical and surgical specialty services and a behavioral health hospital. The health care system has been able to reduce the CAUTI rate by 50% over a 5-year period but have not been able to eliminate CAUTI cases. The two ICUs were selected based on the CAUTI

performance data from the healthcare system. These ICUs were selected because they had CAUTI cases and opportunities for improvement compared to other ICUs. One ICU unit is focused on neuro-surgical and trauma care, and the other ICU unit is focused on cardiac and general adult intensive care. The two ICUs are located in different hospitals within the health system. The ICUs provide care for adults who are 18 years of age and older. The patients in these ICUs have varying reasons for admission and varying diagnosis but are admitted to the ICU because of the acute nature of their illness and need for critical care.

The healthcare system and targeted nursing units were approached by this researcher after a review of the healthcare system's CAUTI data revealed two units whose performance was not meeting the healthcare system goals. Both of these nursing units were adult intensive care units (ICUs).

Permission to conduct the research units was obtained by the Institutional Review Boards (IRB) at The University of North Carolina at Greensboro (UNCG) and the healthcare system; and the health system's Nursing Research Council.

Sample

The sample for this study included registered nurses and nurse technicians (certified nursing assistants) on participating ICUs and CAUTI nursing leadership from the healthcare system. The participants consisted of 10 nursing team participants (nine registered nurses and one nursing technician) who the researcher was able to observe providing foley catheter care. Six participants (including the nurse technician) had 0–5 years of nursing experience, and four participants had over 5 years of nursing experience.

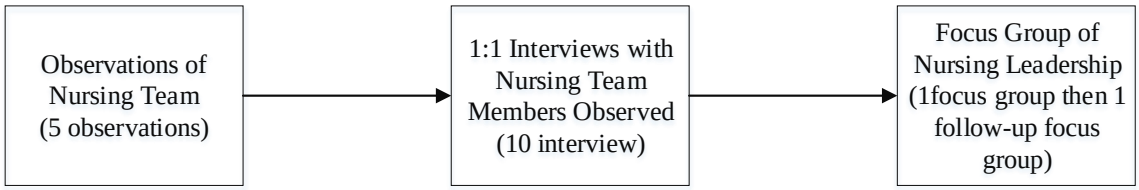
Nursing leadership from the healthcare system included the Director of Infection Prevention and two Clinical Nurse Specialists responsible for CAUTI. The three CAUTI nursing leaders participated in the initial focus group and the follow-up focus group. The directors or leaders from the two ICUs were approached by the researcher for their permission to participate in this study; both granted permission for the study to be conducted on their respective nursing units.

Data Collection Procedures

Data were collected according to the flow chart, as shown in Figure 1. Field observations were performed at the participating health system and the participating nursing intensive care units ICU-A and ICU-B. Permission from the nursing unit directors to perform the research on their units was obtained by the researcher. The researcher notified the unit directors that Institutional Review Board approval had been obtained from the University of North Carolina at Greensboro and the participating health care system. The nursing unit directors were receptive and welcoming. A schedule for field observations and interviews was provided by the researcher and approved by the unit directors. The researcher also requested the nursing unit directors notify their unit nurses and nurse technicians of the reason for the researcher's presence on the unit, and the nursing unit directors agreed to comply.

Figure 1

Data Collection Flow Chart



Field Observations

For the field observations, the researcher arrived at the nursing units and asked to speak with the charge nurse. During introductions and initial conversations with the charge nurses, they were informed the researcher is a student from the University of North Carolina at Greensboro and a registered nurse. When speaking with the charge nurse, the research study was explained and what would be asked of staff. Charge nurses were cooperative and introduced the researcher to staff and provided tours around the units. The charge nurses were also accommodating and told the researcher to let them know if anything additional was needed.

For the field observations, the researcher dressed in blue scrubs, which were compliant with the nursing dress code for the health system. The researcher also wore an identification badge from the health system that identified the researcher as a student from the University of North Carolina at Greensboro. Field observations were recorded in a field journal.

Before any field observations were completed, the researcher discussed with the charge nurse which patients had an indwelling urinary catheter. Once patients were

identified, the researcher asked the charge nurse if any of the patients with indwelling urinary catheters were palliative care, anticipating withdrawal of care, or anticipated to expire in the next 24 hours. Patients meeting these conditions were not approached about participation in this research.

Once patients were identified as having an indwelling urinary catheter, the researcher asked the charge nurse if any family members were present, and if the family would be amenable to being approached about research. The charge nurse provided the information requested. Both ICUs had confidentiality policies that required family members or friends to use a password determined by the family to enter the ICU for visitation and to release information about the patient. This practice is meant to protect patient privacy but also made the researcher adjust the approach of patients and families for participation in this research. The researcher waited for family members of patients to enter the ICU for visitation then approached them about participation in the research project.

The researcher observed the nursing team insert or care for the indwelling urinary catheter in these patients. Due to ensuring privacy during indwelling urinary catheter insertion or care, the researcher approached the patient or patient's family for verbal permission to observe the nursing care being provided. The researcher recorded the verbal consent of the patient or family in the researcher's field notes.

For the observations, the researcher introduced the study and its purpose to members of the nursing team on participating units at unit staff meetings and during the scheduled observation periods on the participating nursing units. The researcher

explained the research study consent form and asked members of the nursing team who were going to place an indwelling urinary catheter or provide indwelling urinary catheter care to patients to participate in the study. Members of the nursing team who were willing to participate were asked to sign a research study consent form by the researcher. After consent was obtained, the researcher observed members of the nursing team either inserting and/or providing care for indwelling urinary catheters.

The researcher planned to perform five observations of nursing team member participants in each ICU as they inserted and/or cared for patients with an indwelling urinary catheter. However, during scheduled observations for one ICU, the researcher was not able to observe any foley catheter insertions or care due to a lack of family to provide consent or patients with a foley catheter. The researcher conversed and asked questions of the nursing team about the procedures and care being performed while observing. The ruling text for indwelling urine catheter care was used as a reference when asking questions while observing such care being performed by the nursing team. Questions and answers occurring during the observations are referred to as impromptu interviews from this point on (see Appendix C for Impromptu Interview Questions). Field notes about the observations and impromptu interviews were recorded by the researcher. The observations and impromptu interview data were then transcribed and entered into an electronic format by the researcher and transcriptionist.

The researcher scheduled observations on the participating ICUs with the units' nursing leadership. These observation sessions were approximately 4 hours per day during times when indwelling urinary catheter insertion and care was normally

completed. Observations were performed during the evening due to limitations in the researcher's schedule. A total of five observations were conducted over 8 weeks in one of the ICUs.

Field notes and the ruling text were used from the healthcare system to compare observations in order to identify behaviors or performances that may have been hidden by the ruling text or clinical documentation by participants. No patient charts were accessed by the researcher. The participants described to the researcher how they documented the care they provided and if they felt like this documentation accurately reflected the care they provided. Field notes from the observations and impromptu interviews were used for data analysis.

Interviews

The researcher performed one-on-one interviews with nine nurses and one nurse technician. The plan was to interview nursing team members who were observed inserting indwelling urinary catheters and/or providing indwelling urinary catheter care. Since observations could not be completed on one of the units during the scheduled observation times, the researcher interviewed nursing team members on this unit who were caring for patients with foley catheters during the observation period and consented to participate in the interviews. The purpose of the one-on-one interviews was for the participants to describe the care they provided in an effort to gain an understanding from their perspective about indwelling urinary catheters, CAUTIs, and the influence ruling text has on their behavior and performance. The minimum number of participants per unit was five for this research study (Rankin, 2014). A total of 10 participants and 10 one-on-

one interviews were performed. The minimum number of participants was 10 based on other institutional ethnography studies as well as data saturation. Participants were interviewed in a private setting after being observed insert or care of an indwelling urinary catheter. Participants only had a single one-on-one interview that occurred shortly after being observed (on the same day) except for the unit where observations could not be completed, and these nurses were interviewed during scheduled observation times and had patients with foley catheters.

The one-on-one interviews were audio-recorded semi-structured interviews discussing the observations made while observing the care provided and the nursing team member's perception of the ruling texts on their behavior and performance. A predetermined set of questions were asked during the one-on-one interviews (see Appendix A. The interview questions were based on doctoral dissertation work by Dale (2013). The questions were appropriate for use in this study since the Dale (2013) study used institutional ethnography to study another healthcare associated infection focusing on ventilator-associated pneumonia (Dale, 2013). Follow-up questions are needed to clarify responses and to clarify further potentially new insights or findings. After the predetermined questions were asked and responded to, probing questions were asked based on observations and field notes. One-on-one interviews were performed in a private, non-threatening location with the participants. The location was easily accessible, and interviews lasted, on average, approximately 30 minutes. Upon completion of the interviews, these were then transcribed by the researcher and transcriptionist into an electronic format for analysis.

The interviews were verbatim transcribed from electronic recordings. After transcribing the interviews, the transcripts were exported into a software program used for qualitative analysis called QDA Miner by Provalis Research (2017). This software program allowed the researcher to select words, phrases, and sentences, and then code them and label them with a specific code and different colors. This program also allowed the researcher to code one phrase multiple times if needed and to show overlap in codes if present. This program also allowed the researcher to review the transcripts more efficiently and code them as they were being read. QDA Miner also provides coding frequency statistics for the transcripts that were analyzed.

Focus Groups

Two focus group sessions were conducted to gain an understanding of nursing leadership's perspective of CAUTIs, indwelling urinary catheter care, and insights to describe the influence of the ruling text on the nursing team's behavior and performance related to CAUTIs. The first focus group was held after the observations and the one-on-one interviews with the nursing leadership team on each participating ICU. Waiting to perform the focus group following the observations and interviews allowed the researcher to conduct the focus group with a better understanding of indwelling urinary catheter placement and care in the ICU setting, as well as a better understanding through observing nursing practice and nursing perception of practice related to CAUTI and indwelling urinary catheters. Based on work by Dale (2013), a predetermined set of interview questions were used for the focus group session (see Appendix B). The second focus group was conducted 2 years later with the same nursing leaders to determine if

any changes had been implemented over the 2-year time period related to CAUTI and/or indwelling urinary catheter care. The same questions from the first focus group were used for the second focus group.

The desired number of participants for the focus groups was between three and eight members of the nursing leadership team (Braun & Clarke, 2013). Three nurse leaders took part in the interviews. The two focus groups were conducted 2 years apart and consisted of three participants who were CAUTI nurse leaders for the healthcare organization. One participant and had 10 to 20 years of nursing experience, and the other two participants had 20-30 years of nursing experience each. The setting was private, easily accessible, and scheduled for one hour. The focus group was audio-recorded and transcribed by the researcher and/or transcriptionist.

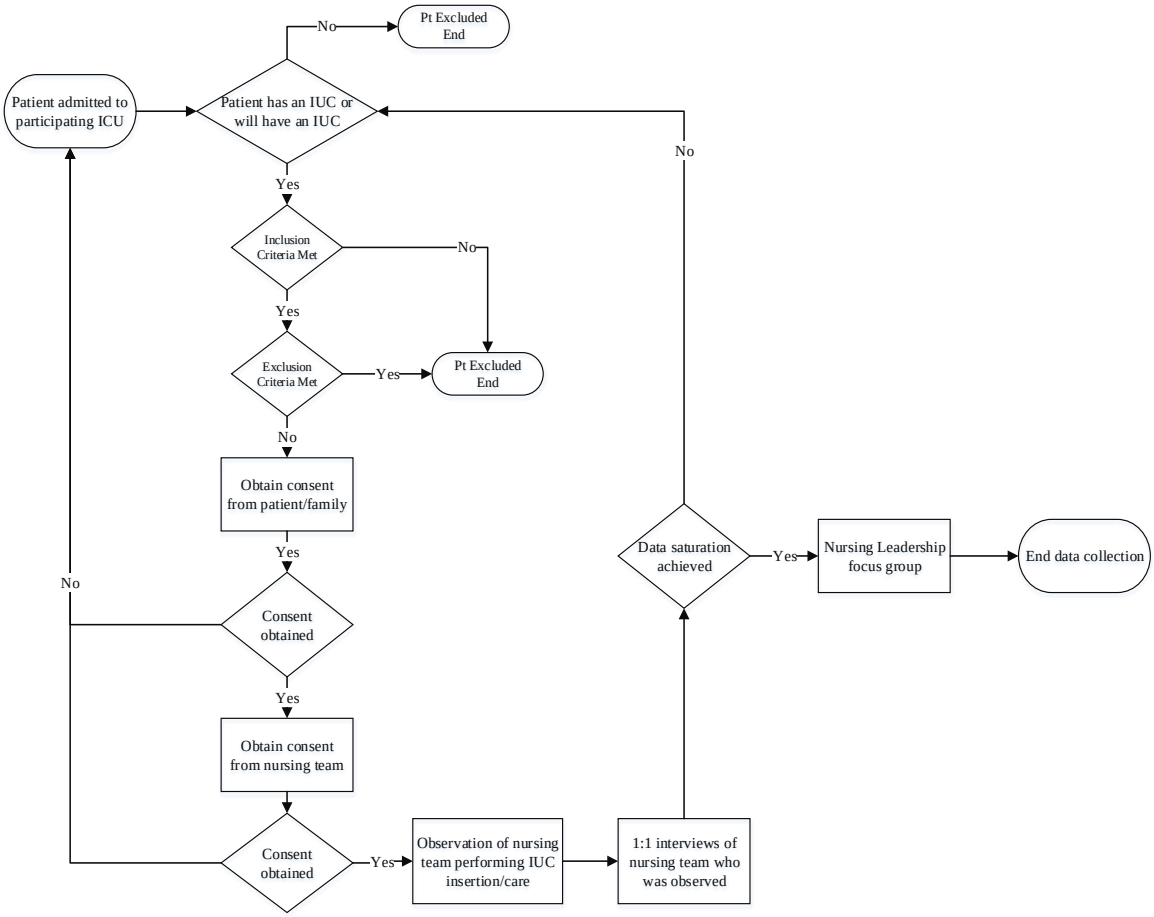
A follow-up focus group session to include the same nursing leaders was performed using the same questions as the previous focus group (see Appendix B). The follow-up focus group session was performed to determine what changes had occurred since the previous focus group session in relation to CAUTI, the ICU, and the nursing team. The focus group was audio-recorded and transcribed by the researcher or transcriptionist. The interview provided the researcher with a longitudinal view of CAUTI performance, the ICU setting, and the nursing team.

Figure 2 is a process map that shows the recruitment and data collection process for this study. The process map demonstrates the inclusion and exclusion criteria for recruitment and data collection. The process map is helpful because it guides the

recruitment and data collection process so that this researcher or other researchers can use this process map if the research is replicated.

Figure 2

Process Map of Recruitment and Data Collection



Data Analyses

The researcher listened to the audio recordings several times to become immersed in the data. Field notes were kept for observations and during interviews so that the researcher could later reflect on the areas and use these notes as reminders.

Data analysis occurred over approximately 8 weeks. The use of an electronic document facilitated the coding process. The collection of the data and data analysis occurred simultaneously until data saturation was achieved.

Experiential Thematic Analysis

Data analysis was completed using experiential thematic analysis. Thematic analysis is a method used to identify themes and patterns related to research questions (Braun & Clarke, 2013). Experiential thematic analysis is focused on the view of the participants, in how they experience and understand the work environment they perform in (Braun & Clarke, 2013). This method was used to identify themes and patterns from the perspective of the participants in relation to the performance of CAUTIs, care provided, nursing practice, and nursing documentation.

To prepare the data for analysis, the researcher recorded all observations and field notes in a journal which were then transcribed into an electronic document. Interviews and focus groups were recorded electronically, then transcribed into an electronic document. The electronic documents containing the observations, field notes, and interviews facilitated data analysis.

After listening to the audio recordings several times, transcription of these began the data analysis process. The interviews were transcribed by the transcriptionist. After the transcription was completed, the researcher reviewed the transcripts for accuracy compared to the audio recordings. The transcript was accurate and any missing words present in the transcript were added by the researcher after listening to the audio

recording. After transcription, the researcher read the transcripts to become familiar with the content of these and to take note of any items of interest (Braun & Clarke, 2013).

Items of interest were portions of the transcripts that had the potential to answer the posed research questions and/or provided potential new insights into nursing performance related to CAUTI care (Braun & Clarke, 2013).

After reading the transcripts and making notes, the researcher began coding across all transcripts (Braun & Clarke, 2013). Coding was completed by reading the transcripts and identifying portions of the transcript that were of interest and/or relevance to the posed research questions; therefore, not all items were coded. After identifying the portions of the transcript of interest, the portion was coded with a word or phrase describing its relevance to the research question. A complete list of the codes and their definitions was kept by the researcher. Codes were as concise and specific as possible (Braun & Clarke, 2013). The next step in data analysis was identifying themes among the codes (Braun & Clarke, 2013). The codes that were related to a particular research question or an area of interest not previously identified were grouped into themes (Braun & Clarke, 2013). Themes identified were then defined. After determining the themes found in the codes, the researcher built a thematic map demonstrating how the codes are related to one another and the themes in relation to the research questions (Braun & Clarke, 2013). Coding and theme development were an iterative process that required revision and clarification of code and theme definitions (Braun & Clarke, 2013). Notes and a journal were kept by the researcher during data analysis as a reference. After all of the data were coded and the themes identified, the researcher reviewed the themes and

the thematic map for congruence and clarity. If no further revisions were needed, the themes and the thematic map were found to be complete. The committee dissertation chair reviewed the codes, themes, and the thematic map for logical grouping and completeness. The chair determined the thematic mapping was complete for this research.

Focus Group Data Analysis

The focus group interviews were transcribed by the transcriptionist. After the transcription was completed, the researcher reviewed the transcript for accuracy compared to the audio recording of the focus group. The transcript was accurate and any missing words present in the transcript were added by the researcher after listening to the audio recording.

After transcription was completed, the transcript was read, and major topics or issues were identified based on relevance to the research questions. The transcript was further reviewed in a deeper second reading to identify data and sections of data that aligned with the topics and were relevant to the research question (Stewart et al., 2007). Thereafter, the transcript was reviewed several times to ensure the topics were relevant and to add or modify the topics as insight was gained about the transcript by the researcher (Stewart et al., 2007). Data and sections of data were marked with the topic which applied, and the section of data clearly identified either by color-coding or by copying the section of data from the transcript and placing it with the associated topic in a separate Microsoft Word file (Stewart et al., 2007). The list of topics identified and supporting data were reported in the final analysis and were used to answer the research

question. The data from the focus group were used to help understand relationships between the members of the focus group and the nursing team, the effect of the ruling text on the performance of the nursing team, and the effect of the ruling text on the relationship between the nursing teams and the nursing leadership.

Observation Data Analysis

Observations of the participants inserting and/or caring for an indwelling foley catheter were recorded in the field notes of the researcher. The recorded observations were transcribed to create a process map for the care provided, inserting an indwelling urinary catheter, or indwelling urinary catheter care. Each observation was reviewed, and each step in the observation was recorded into the process map. The number of times a step appears in the process was recorded to determine the consistency of nursing practice and then compared to the process map and to the ruling text of the healthcare system. The process map was compared to the interview transcripts to identify differences in practice between participants, nurses' perception of practice and perception, and practice between nursing team members and nursing leadership. The differences identified helped illustrate the influence of the ruling text on nursing team behavior and practice.

CHAPTER IV

FINDINGS

The purpose of this study was to describe how the ruling text of the healthcare organization and participating hospital system ICUs organize the behavior and performance of the ICU nursing team related to CAUTI. Institutional ethnography was the methodology used. The findings of this research study are presented in this chapter. The sample is first described. Then findings are presented in the order data were collected: Interviews, field observations, focus groups, and reading of the ruling text. The research question is then answered concerning the ruling text of the healthcare system.

Ruling Text

The policy and procedures for urinary catheter care are the ruling text of the health care system and shape the care provided by the nurses and nurse technician in the participating ICUs. Information on the ruling text in the healthcare system obtained by the researcher from a CAUTI nursing leader and were used as a reference for observations in relation to insertion, care, and maintenance of the indwelling urinary catheter. Indwelling urinary catheter(s) will be referred to as a foley or foley catheter from this point forward. Additional examples of the ruling text that were identified include competency tools, education offerings, emails, posters, and fliers that were used to communicate changes or updates related to foley care and CAUTI. Also reviewed was the hospital system orientation materials and preceptor forms for new employees, training

materials for nurse technicians who are being certified to insert foley catheters, and investigation forms that are required when a CAUTI is identified. All of these examples of the ruling text provide evidence of direction and structure to the way the nurses and nurse technicians care for the patient and interact with each other and other healthcare team members.

Field Observations

Five field observations were completed and recorded in a field journal. The field observations were of foley catheter care only as the researcher did not have the opportunity observe the insertion of a foley catheter during field observations. After the field observations were completed, the observations were transcribed and compared to one another to see if the nursing practice was performed consistently as a process and consistently across nursing team members. An example of the field note recorded for one observation is presented below:

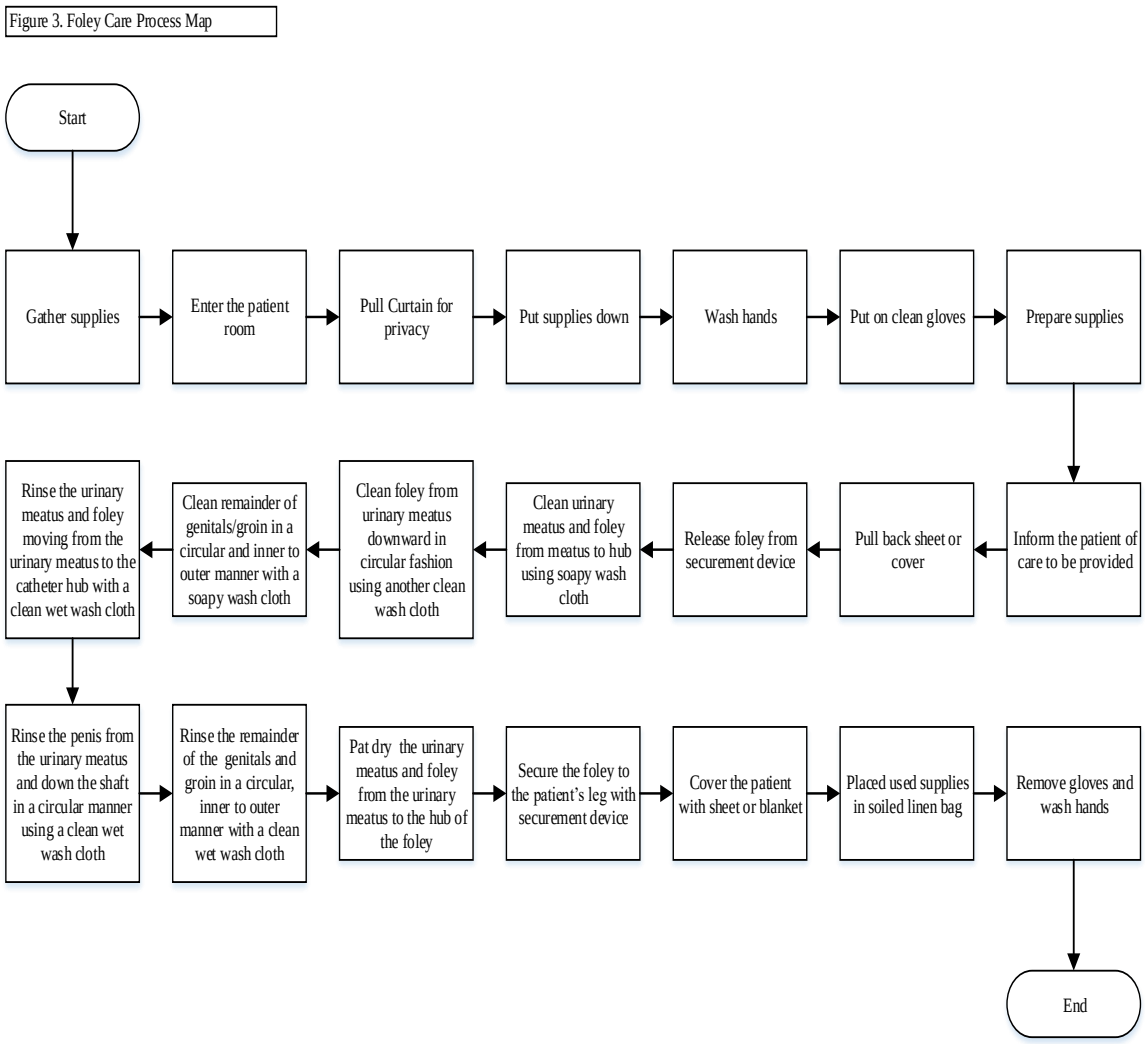
> The nurse was consented prior to this observation. The family of the patient provided verbal consent for the researcher to observe the care of the patient. The researcher followed the nurse into the patient's room. The curtain to the room was pulled shut to provide privacy. The nurse performed hand hygiene upon entering the room with the nurse pointing out to the researcher that she washed her hands. The nurse put on clean gloves and proceeded to gather the supplies need to perform catheter care including wet wash clothes with soap, wet clean wash clothes, and dry wash clothes and a clean towel to keep the wash clothes clean. The nurse proceeded to tell the patient she was about to perform catheter care. The nurse pulled the patient's cover back and the patient's gown up. She disconnected the securement device, which secures the indwelling urinary catheter to the leg of the patient. She then proceeded to provide indwelling urinary catheter care. She started by taking a soapy wash cloth and cleaning the indwelling urinary catheter from the urinary meatus down to the hub of the indwelling urinary catheter. She then used another soapy washcloth and cleaned the penis from the urinary meatus outward and down the shaft. She then cleaned

> the rest perineal area and groin in a circular outward motion. She then took a clean wash wet wash cloth and rinsed the indwelling urinary catheter in the same fashion, starting at the urinary meatus and moving down the catheter to hub of the indwelling urinary catheter, holding the catheter in place with her hand while she rinsed. She then rinsed the rest of the penis in the same manner, starting at the urinary meatus working outward and down the shaft of the penis, then outward from the penis to the rest of the groin in a circular motion. She then used a clean dry washcloth to pat dry the indwelling urinary catheter, penis, and groin area using the same inner to outer and circular motions. Once she had finished drying the patient, she secured the indwelling urinary catheter to the patient's leg with the securement device. She then pulled the patient's gown down and covered him with the sheet.

To facilitate comparison of the field observations, the researcher created a process map of foley care provided by the nursing team members. The foley catheter care process map is in Figure 3. Each observation was compared to the process map to determine if care was consistent across nursing team members, as each observation included different team members. Comparing all of the observations to the process map revealed the foley catheter care provided by the nursing team members was consistent across team members. Comparing the process map to the ruling text revealed the foley catheter care provided was consistent with the ruling text of the health system.

Figure 3

Foley Care Process Map (Developed from Observations)



Nursing Documentation

After the completion of foley catheter care by one of the nurses, the researcher asked if he could observe the documentation. The nurse agreed and proceeded to demonstrate to the researcher how the documentation was completed in the electronic

medical record (EMR). She opened the patient's chart, then went to the section of the EMR where this type of care was documented. This area of care is documented in a flowsheet. A flowsheet is an area of the EMR with multiple areas of care that can be documented by checking a box that represents the area of care that was provided by the nurse. There is a section in the flowsheet which allows the nurse or nurse technician to document peri-care and foley catheter care. The nurse explained that they could not document peri-care and foley catheter care with one click of a button. She explained that when they provide foley catheter care, they usually perform peri-care as well since they are in the same region of the patient's body. Peri-care and foley catheter care are considered separate acts of care, but according to the nurse, they are typically performed together. When she documented the foley catheter care, she simply checked the box beside indwelling urinary catheter care. When she checked the box on the flowsheet, a field displayed in the EMR that explained what the foley catheter care entailed. While the description of foley catheter care is provided, the description of care from documentation does not match the details of the care provided. This is an example of care being "hidden by the text."

Interview Findings

One of the tools used in institutional ethnography is interviews with people in the institution who are the subject of the research. These interviews provided the researcher the opportunity to understand the institution better, the social constructs of the institution, and how the interactions of people in the institution are influenced or ruled by the institution. The researcher conducted 10 one on one interviews with members of the

nursing team in the participating intensive care units (ICUs). Each participant provided written informed consent to participate in the study. The interview dataset consisted of five interviews from ICU A and five interviews from ICU B. One of the interviews was with a nurse technician from ICU A, and the rest of the interviews were with registered nurses. Interviews lasted from 30 minutes to one hour, with an average of 45 minutes in length. Braun and Clarke's (2013) thematic analysis strategy was followed. The codes are presented in Table 1.

Table 1

Codes and Their Definitions

Code	Definition
Nursing School	School where nurses received their nursing training including theory and didactic education, clinical education and practice, and hands on experience.
CNA training	Training received to become a certified nursing assistant (CNA), often occurring in nursing school.
CNA Experience	Time spent working as a CNA, including time working as a CAN while in nursing school and/or prior to becoming a nurse.
Sim Lab	Simulation laboratory where nursing students or CNA would receive training and practice including the use of mannequins to practice nursing skills
HLC	Online learning program called HealthStream, this allows the health system to upload educational power points and/or videos to a server to be access and reviewed by nursing team members including testing on material presented.
New Nurse Academy	The training program for nurses who have just graduated from nursing school. The program includes rotations through different nursing units using different nursing preceptors.

Code	Definition
See One Do One	This is a traditional informal training method for nursing team members referring to the see the procedure one time with someone else, the do the procedure with someone else who provides guidance.
Preceptor	A nurse who serves as a resource to a new nurse or new nurse to a nursing team. The preceptor provides education, hands on training, role modeling, and mentoring for the staff assigned to them.
Foley Care Specifics	Foley refers to the name of the indwelling urinary catheter and the name used by nurses when referring to an indwelling urinary catheter. This code is used to identify when nursing team members were describing or discussing specifics related to caring for a foley catheter.
Foley Insertion	This code was used to identify when nursing team members were discussing or describing the process or specifics for inserting a foley catheter.
Catheter Size	Indwelling urinary catheters come in a variety of sizes. The size of the catheter used for the patient depends on the policy/procedure of the health system, who places the catheter, and the purpose of the catheter.
Foley Documentation	The documentation of care provided by members of the nursing team to the patient and specifically about the care provided to the indwelling urinary catheter.
Consistency of Care	This code was used to identify when nursing team members would discuss inconsistencies in the care they have observed by other members of the nursing team.
Care Suggestion	This code was used to identify when nursing team members made a suggestion to improve care related to the indwelling urinary catheter.
Foley Duration	This code was used to identify when nursing team members discussed the length of time that an indwelling urinary catheter remained in place.

Code	Definition
Competency	This code was used to identify when nursing team members discussed competency related to the insertion of an indwelling urinary catheter or care of the indwelling urinary catheter. Competency refers to the ability of the nursing team member to provide care according to the policy and procedure of the health care system.
Policy/ Procedure	This code was used to identify when members of the nursing g team discussed the policy and procedure of the health care system. The policy and procedure are the ruling text of the health care system.
Updates and Changes	This code refers to a discussion about how policy and procedure updates were made available to members of the nursing team.
Gender	This code is used to identify discussion by members of the nursing team about the patient gender and issues related to patient gender and the indwelling urinary catheter.
Team Dynamics	This code is used to identify discussions by members of the nursing team related to team dynamics or teamwork in their particular unit and among members of their team.
Shift Handoff	This code is used to identify discussion by members of the nursing team related to the handoff or transfer of the patient from one nurse to another nurse. This is typically done during the shift changes when one nurse is leaving and another nurse is coming on. This includes a report about the patient, condition, pending tests and procedures, lines and equipment in use, medications, and an assessment of the patient. In this study, this code is particular to communication about the indwelling urinary catheter and care of the catheter.
Critical	This code is used to identify discussion by members of the nursing team when identifying the patient's condition as critical. Critical meaning the patient is in need of devices, equipment, or medications in order to survive, and/or without intense nursing supervision and care, the patient's condition could quickly deteriorate.

Code	Definition
Alert and Cooperative	This code is used to identify discussion by members of the nursing team about patients who are alert and cooperative. These patients may be in the intensive care unit for more intensive nursing care or supervision or because a bed on a less acute nursing unit is not available. These patients typically do not require intense nursing care, perform activities of daily living with minimal or no assistance.
Stool Incontinence	This code is used to identify discussions by members of the nursing team regarding episodes of stool incontinence by patients. Stool incontinence is when a patient has a bowel movement and has no control of when and where the bowel movement occurs.
Uncooperative	This code is used to identify discussion by members of the nursing team when describing patients who are uncooperative. Patients may be uncooperative or unable or willing to follow instructions or commands due to their condition, diagnosis, or conditions. When a patient is uncooperative, they may remove devices or lines being used to provide care, including indwelling urinary catheters.
Dynamic	This code is used to identify discussion by members of the nursing team regarding the dynamic or ever-changing work conditions in the intensive care unit.
Work Routine	This code is used to identify discussion by members of the nursing team about areas of work routine on their particular unit and/or their personal work routine.

In Table 2, the codes and categories are listed with the count of how many times a code was used along with the percentage a code was used in a particular category (percent of category) and percentage a code was used from all codes used (percentage of total). The percentages of codes that make up a category out of the total number of codes are also presented.

Table 2

Categories and Codes Counts

Category	Code	Count	% of Category	% of Total
Nurse and Health Care Education and Training	Nursing School	10	18.18%	2.90%
	CNA Training	10	18.18%	2.90%
	CNA Experience	6	10.91%	1.70%
	Sim Lab	10	18.18%	2.90%
	HLC	7	12.73%	2.00%
	New Nurse Academy	4	7.27%	1.20%
	See One Do One	4	7.27%	1.20%
	Preceptor	4	7.27%	1.20%
Nurse and Health Care Education Totals		55	100.00%	16.00%
Foley Catheter Care	Foley Care Specifics	32	20.51%	9.30%
	Foley Insertion	18	11.54%	5.20%
	Catheter Size	13	8.33%	3.80%
	Foley Documentation	31	19.87%	9.00%
	Consistency of Care	36	23.08%	10.50%
	Care Suggestion	20	12.82%	5.80%
	Foley Duration	3	1.92%	0.90%
	Competency	3	1.92%	0.90%
Foley Catheter Care Totals		156	100.00%	45.40%
Foley Catheter Policy and Procedure	Policy/Procedure	46	71.88%	13.40%
	Updates and Changes	17	26.56%	4.90%
	Gender	1	1.56%	0.30%

Category	Code	Count	% of Category	% of Total
Foley Catheter Policy and Procedure Totals		64	100.00%	18.60%
ICU Characteristics	Dynamic	10	37.04%	2.90%
	Work Routine	13	48.15%	3.80%
	Team Dynamics	3	11.11%	0.90%
	Shift Handoff	1	3.70%	0.30%
ICU Characteristics Totals		27	100.00%	7.90%
Patient Condition	Critical	21	50.00%	6.10%
	Alert and Cooperative	8	19.05%	2.30%
	Stool Incontinence	4	9.52%	1.20%
	Uncooperative	9	21.43%	2.60%
Patient Condition Totals		42	100.00%	12.20%
Totals		344		100.00%

Codes were then collapsed into 5 categories and then into three themes: Nursing Health Education and Training Varies, Foley Catheter Care Ruling Text and Realities of Care, and Complex and Dynamic Work Area and Environment of Care (see Table 3). These themes are described in detail in the following sections.

Table 3

Themes, Categories, and Codes

Theme	Category	Code
Nursing Health Education and Training Varies	Nurse and Health Care Education and Training	*Nursing School*
		CNA training

Theme	Category	Code
		CNA Experience
		Sim Lab
		HLC
		New Nurse Academy
		See One Do One
		Preceptor
Foley Catheter Care Ruling Text and Realities of Care	Foley Catheter Care	*Foley Care Specifics*
		Foley Insertion
		Catheter Size
		Foley Documentation
		Consistency of Care
		Care Suggestion
		Foley Duration
		Competency
	Foley Catheter Policy and Procedure	*Policy/Procedure*
		Updates and Changes
		Gender
Complex and Dynamic Work Area and Environment of Care	ICU Characteristics	*Dynamic*
		Work Routine
		Team Dynamics
		Shift Handoff
	Patient Condition	*Critical*
		Alert and Cooperative
		Stool Incontinence
		Uncooperative

Theme 1: Nursing Health Education and Training Varies

The first theme identified is Nursing Health Education and Training Varies. This theme is important because it represents the beginning of socialization for people who are entering the healthcare field as nurses or CNAs. In the healthcare system where the research was performed, CNAs are referred to as nurse technicians. There are three pathways that people may follow regarding CNA training: (a) complete CNA training and work as a nurse technician; (b) complete training and enroll in nursing school, or (c) enroll in nursing school and complete CNA training as part of their clinical practicum requirements. The beginning of nursing socialization introduces people to a new social world complete with new rules, standards, language, behaviors, attire, and social hierarchy, or the start of the ruling text of the nursing profession. Foley catheter care is first introduced in both CNA training and in nursing school.

Participants were first asked to describe when they learned to perform foley catheter care. All of the participants reported their initial training about foley catheter care took place in nursing school or their CNA programs. Participants provided similar responses: “Originally, I learned in nursing school.” Another participant stated, “You do it in nursing school, but the real thing’s completely different.” Another participant elaborated further;

> I first started training for my CNA in an allied science program, HOSA, in my senior year. It was pretty extensive. … We had a teacher who oversaw us, and we basically went into little groups, and sometimes we were alone, but she would always come and check back on us and watch us perform the care and make sure we were comfortable doing it. I think the first one I ever cleaned, my teacher

> wasn't there but she had explained everything to us and I did it just how I showed you (as she was shown by the teacher).

Overlap in the nursing school and CNA training codes occurred because some of the participants completed CNA training at separate times, and nursing schools' programs contain training so students can become CNAs while in school. The responses demonstrate nursing school and CNA programs are the original places of learning for foley catheter care as opposed to on-the-job training.

Both CNAs and nurses in this study received their initial training for foley catheter care in the simulation lab using manikins and nurse educator supervision to practice nursing skills. One participant stated,

> We had some other manikins up there, too, that you did the basic practice on, when you're in clinicals, I've forgotten what year, I think that was junior year, but they basically show you how to do it, then they get you one on one with one of the instructors, and you would show them how to do it, and they would critique what you did wrong or right, and you would just learn from there.

Another stated,

> I think as a student, we had a pre-nursing class, and it was just your basics of foleys and bed baths and all of that, and the mannequins are very easy. They're not similar to real life at all. It was helpful to at least show you the basics and steps of what to do.

Another confirmed, "We were shown how to do it, then we practiced it on simulation manikins, and then we had to get checked off on it."

The participants who used simulation labs also reported the use of human manikins during simulation lab experiences. They reported these experiences helped them learn about technical aspects of foley catheter care and the process of providing this type of care, but they also reported the simulation lab did not compare to the reality of patient care after they completed training.

When these nursing team members enter the hospital workforce, they receive further reinforcement of the training received in nursing school and nursing assistant programs through different educational methods to verify foley catheter care is performed properly. These methods include simulation lab, preceptors, 'See One, Do One,' and computer-based learning. This training may involve one or any combination of these methods. These methods reinforce the ruling text of the health system and the training already received in school. Participants stated, "I feel like with the academy, they do a good job of going over policies and procedures and learning how to do it the right way first versus learning from floor nurses that might have their own way from yours." And,

> By demonstration first. Even here, they demonstrate it first once you get hired, and then they let you do it. Basically, I guess, by doing . . . Oh yeah. The preceptor showed you how and then you did it, then you were checked off, but only if you did it correctly . . . She would stop me and say, "Nope, back up, I'll show you again," and then we'll do it again.

And,

> As a new nurse, we had classes on how to insert foley catheters and do foley care properly. We had to do online learning modules and then be observed—I think up to three times—inserting one in both a male and a female, and then doing proper

> foley care and getting checked off on it . . . The hospital trained us, and then we learned it in nursing school too, but they also trained us in the hospital.

The use of multiple educational methods to reinforce the training received in school also introduces and reinforces the ruling text of the health system and nurses and CNA competency when employed as nurses and CNAs.

Theme 2: Foley Catheter Care Ruling Text and Realities of Care

The Foley Catheter Care Ruling Text and Realities of Care theme were developed using codes and categories related to foley catheter care and foley catheter care policy and procedure. This theme is important because it describes how the ruling text influenced the participants' interactions with the foley catheter, each other, and the healthcare system. This theme had the greatest number of codes, which were subdivided into two subthemes: Foley Catheter Care and Foley Catheter Care Policy and Procedure.

Foley Catheter Care

Specific topics under this subtheme discussed included foley catheter insertion, foley catheter duration, foley catheter care, foley catheter documentation, and foley catheter suggestions.

The participants first discussed foley catheter insertion, especially in relation to the size of the catheter. Comments included, "Well, depending on if it's a man or a woman, for men we do 16 French, for women we usually do 14 French unless there's some other specification in the order." Another stated, "Of course, you go to the stockroom or whatever, women get 14s, men get 16s. There are some latex-free kits if somebody has a latex allergy." These two findings demonstrate consistency among all

participants when discussing the size of the catheter to be used for patients—one size for men and one size for women. The consistency of the catheter size supports the Catheter size code. This consistency demonstrates how the ruling text of the health care system guides patient care and participant actions.

Challenges with foley catheter insertion with different populations was discussed. A participant stated,

> Some of the women are just difficult to find the magic spot or whatever. It's just hard to find their urethras. You're trying to not contaminate the foley, you hate to keep wasting kit after kit, but if you put it in your vagina then it's doomed, you're going to have to get another one. That's the main thing, trying to keep this hand uncontaminated and get a spread enough here to find, and sometimes it's kind of underneath where you think it is. You just kind of shoot high and hope you hit it or whatever, and that's why it's good to have somebody help you hold it open more because you can't use one hand at a time. Especially with the elderly, their anatomy is a little bit different, it seems, the way their urethra kind of goes underneath, so that's a difficult part of it, I think, for them. We get more and more obese patients. Their anatomy is more difficult, so that's the issue in this population. We just get more elderly patients here; a lot of guys have prostate issues, and it's hard to slide a foley past. Sometimes you keep working at it, and you get it to finally relax enough, like push it against, and you feel the prostate hit or whatever. If you hold it there, sometimes it'll relax, you slide it up and find it, finish it and slide it under, but I guess, elderly are more difficult it seems.

These challenges demonstrate some of the complexity nurses face while providing care that is in compliance with the ruling text of the health care system.

Once a foley catheter is inserted, the duration, or length of time the catheter remains in, is important for the prevention of CAUTI. Participants discussed the issue of foley duration versus patient needs. One participant stated,

> You want to get them out as fast as you can to avoid infection, but then you also, my thoughts are, you have this little 80-year-old something lady, and she's incontinent anyway, and she's come in with red rashes and stuff like that, and you know the foley needs to come out but what's worse type thing.

Another participant also discussed potential skin breakdown and incontinence when discussing foley catheter duration,

> I think that we probably don't try to get them out quickly enough. I haven't watched a lot of people put in foleys; I'm assuming everyone is trying to do as sterile as a technique that they can. I'm guessing that's probably the case. I don't know that anybody around here would not try and use sterile care or would miss (foley goes into wrong place) and use the same one, I don't know that people would do that or not. I think it is kind of a selfish thing for all of us, including me, not to want to take a foley out when you have certain patients, especially ones that are heavyset or ones that are incontinent, that you know you will have to be cleaning up. Of course, there is a reason to keep it in right there, because it causes skin breakdown from the moisture. I think we probably leave them in a little bit too long sometimes. That's the only thing I can think of right offhand, I'm assuming people use a sterile technique, and I'm assuming that people leave them in a little bit longer than they should.

These quotes illustrate that participants understand the rationale for removing the foley catheter as soon as possible, but also understand that early removal may expose the patient to potential harm such as CAUTI development, neurogenic bladder, and bladder over-distention. There are also issues related to "staff convenience" with nursing staff preferring to keep the foley catheters in longer due to the extra work required in providing toileting and incontinence care to prevent skin breakdown, which can be made more challenging for a patient who is overweight or obese or physically limited. Nursing staff are placed in a position of causing potential harm with two courses of action; the

health system sets the priority of which action should be taken, but the nursing staff and the patient are left with the potential negative outcomes and the potential consequences.

Foley catheter care was an important topic in all participant interviews. Participants were specifically asked about the frequency of foley catheter care. One participant stated, “We do it (foley care) once a shift unless there’s a need to do it, like if there’s a bowel movement that gets onto the foley. Even if it’s not on there, I usually do foley care again”; and “It’s just every shift, it’s not specific.” Another stated,

> A lot of people do it right when they do their assessment, they go ahead and do it. We do it immediately when they come up. The aid (CNA) is usually in there with us, and she does her chlorhexidine bath right when the patient gets here, and that’s when we also do the foley care. We bathe them daily, of course. But, my patient, trying to get him bathed tonight, we’ll see how that goes. If they had been bathed during the day, then I would do foley care at night and vice versa.

Another supporting statement included,

> We’re supposed to do it every 12 hours. What I do is every time they have a bath, I do foley care if they’re having excess drainage in that area, if they’re having a lot of secretions, because sometimes they’ll swell, and the skin gets sloppy and chafing. If it looks like there’s anything on it, I’ll pretty much do foley care, but especially after BMs or if they’re bleeding. Sometimes if they’re bleeding a lot, you try not to do it excessively because that could make the bleeding worse. Pretty much like that.

All participants consistently reported that foley catheter care was to be provided at least once per shift. Participants were also consistent in identifying conditions requiring additional care, such as when the perineal area is soiled with bowel movements, drainage, or bleeding.

Participants expressed inconsistency about the specifics of when foley catheter care should be performed. Consistency of care must be considered to determine whether care is consistent with the ruling text because variation from the ruling text may contribute to HAI development. When asked what changes they would like to see around foley catheter care, one participant stated, "I guess we just need more consistency. Like if we're going to do the wipes, we need to keep up." This same participant also commented on the soap used for foley catheter care:

> I was told you could either use the bath soap, which I don't like to use, no antimicrobial agents to it, I use this (hand soap) because it's got the antimicrobial, and I was told either one is acceptable. There's not consistency when we go back to soap and water, there's not consistency with what we're using. Some people use this, some people use that.

Another participant stated,

> Yeah, consistent practice is one of them. And people using the basins. I use basins for baths, but I was lining (the basin with a liner). We used to have liners, but they were talking about moving them to bath bags and getting rid of the basins altogether. I hadn't seen that happen yet to where I always put a liner bag in there to line it to make sure it's clean because there's growth in those basins. Consistency with that, too.

Participants discussed their experiences working with team members who were not providing care according to the ruling text. One stated,

> I know I was in a different unit when I was on a CAUTI team, and I would try to provide feedback if I saw a tech not doing it properly, and there were some (who were) very experienced, I'd say, they'd been here for a long time kind of 'this is how I do it, this is how I'm going to do it' kind of attitude. I'd just remind them based on policy, this is how we do it, if you don't want to do it that way on my

> patient then I'll do it. I'm kind of afraid of have conflict with others, I've told directors and stuff, but sometimes you do meet that little head-butting with new policies or people stuck in their ways. It's kind of hard.

This quote supports that situations occur where the ruling text does not rule the behavior of a nursing team member and how this puts a strain on the relationship between team members. This code also represents potential gaps in accountability for the employee who is not following policy and procedure and the director or leaders who are not holding staff accountable.

Another participant described inconsistent care with peri-care wipes versus soap and water with a washcloth: "I know some units use the pink peri-care wipes now whereas others use running water, don't use the basin. I find that you'll see a lot of people don't do it correctly." When asked to elaborate on how it is not done correctly, the participant stated,

> They'll reuse basin water that they've been using on a patient. There was a tech one time, and as a new nurse, the tech was doing it, and I tried to appropriately tell them how to do it without telling them, "Hey, you're doing this wrong." I tried to appropriately say, "Let's use clean water, that's dirty water."

This participant was then probed to elaborate further about the interaction with the team member,

> She was pretty receptive of it. I think she just kind of got caught in the moment, cleaning the patient, getting it done, moving on to the next one. Not the thought process behind it, 'oh this is dirty water, let's . . .' you know? She was really receptive, she didn't get upset or anything which, I think sometimes there could be a different situation.

This participant described inconsistency in care with products and procedures for foley catheter care. The issue of peri-care wipes versus washcloth and soap has been previously described in this study. The use of washbasins or no washbasin (running water) is a relatively new practice according to participants. This is related to the research reports that basins are reservoirs for microorganisms that could lead to CAUTI; eliminating the basin and using running water from the sink would reduce the risk but a link between microorganisms and infection has not been established (Agency for Healthcare Research and Quality, 2017). However, from the participant's description, this is also an example of inconsistent care. The participant then describes working with a teammate who was using a basin and did not get clean water to perform foley catheter care. This inconsistent care could be due to changes in the ruling text to reflect current best practices, pilot studies, quality improvement projects to improve HAI rates, individual team member decision making and behaviors due to recent knowledge acquisition from journal articles, conferences, etc., lack of information about policy changes or training provided by the healthcare organization.

Care inconsistency was also described in terms of competence in foley catheter care. According to the participants, this could be another nurse observing them perform the care or talking them through how to perform the care. One participant described the competency check in the following manner when a new foley catheter kit was introduced,

> Then we had a leader, a nurse that works day shift, that was in charge of checking people off (competency). She brought the new kits out and went over again how to do it. If you had a patient, because we worked nights, she observed the day

> shift people putting it in. We went through the motions, just verbally explaining it to her.

The participant describes the nurse leader observing some nurses performing a urinary catheterization and talking through the procedure with other nurses to make sure they understand how they are supposed to do it according to the ruling text. This difference in the standard may be a potential gap in practice and variation from the ruling text that could potentially lead to CAUTI development.

In the nursing profession, documentation of care is essential. The documentation provides a record of care provided to the patient, including foley catheter care. Participants all stated that foley catheter care was required and needed to be documented in the correct place for it to be complete documentation. This is another example of the ruling text of the health system influencing and controlling nursing team behavior and performance related to documentation of care. Participants were also specifically asked if they felt their documentation accurately reflected the care they provided. Participants responded, “I think so. I’m trying to think what else. Because it asked me about peri-care, foley care. I think so, I can’t remember what it asked me all the time, but I think it does ask you if the care was done and making sure it’s flowing properly.” Another stated,

> For the most part, I think it’s pretty good. I like it better than (old EMR), the system we just came from. Overall, I know they’re really trying to push foley care and the stuff we get done. I think it’d be even better if it was a whole other thing on its own. Under the daily cares, under hygiene, that’s where you go in and find whether you bathed, or what you did. If they actually had another link for foley care or anything specific they want done, have you done it, a simple yes or no.

The majority of participants stated that they felt documentation required by the health care system reflects the care they provided. However, one of the participants expressed a different view, “Simply saying foley care is a very broad thing. I think it’s a very broad documentation. Just saying foley care or peri-care. You don’t say whether you used wipes or running water.” When probed to explain further if the lack of specificity in the documentation was a concern, the participant responded,

> Certainly, with what I’ve seen people doing I would say yes, it bothers me. The fact that with CAUTIs it is preventable, it is something that the patients get because of our care or because of their condition and everything. With it being preventable and us knowing how to prevent it, I think it does bother me.

Another participant expressed concerns about the lack of specificity in the documentation required by the health care system but also stated in her interview that she did document as required. This participant also stated what she would like to see in the documentation,

> I’d like the more descriptive, this is what you did, this is what you used, the wipes versus the basin versus the running water. I certainly think that you would see a lot of differences in the ways people do it and the techniques. A lot of people may not know that you’re supposed to use the running water.

This participant’s response to the question and feelings about the documentation demonstrates the effect of the ruling text on documentation of care and the nursing team. Including this participant, a total of three participants expressed concerns about the lack of specificity in the documentation related to foley care.

The final topic discussed under the subtheme of foley catheter care was suggestions provided with foley catheter care. The suggestions covered alternatives to

foley catheters, the use of anti-microbial solutions, team communication, and which nursing department should place the foley catheter in the patient. For example, a participant stated, "Maybe not use quite so much (foley catheters)? The men, I think, maybe the best thing to do for them is instead of doing the invasive catheters is just the condom caths." Another participant had a suggestion about communication between team members:

> Well, I was a tech. And I know what it's like to have nurses kind of look down on you and talk down on you, so I try to be on the same level. We're a team, not, you need to do this kind of thing. Just from my experience as a tech, I try to remember how it felt when nurses talk down to me. I definitely try to be careful with the way I talk to techs and how I delegate things.

This participant highlights what it is like to be talked down to or just told what to do instead of being treated like a team member. These data demonstrate the potential for adverse team dynamics, which may lead to lower-performing teams and the development of resentment among team members. Lower team performance and resentment among team members could potentially contribute to CAUTI development and negative foley catheter metric results such as catheter days and CAUTI rates.

Finally, one participant suggested the ideal location for the insertion of foley catheters:

> Putting a foley in . . . I mean . . . I think, sometimes, honestly, it's better if foleys were put in up here (ICU) than in the emergency department. I feel like the emergency department there's so much going on, I mean, it's fast-paced up here, but we have two patients for the most part. Hopefully, if we're getting a new admission the other patient is stable. We can get them settled in, get them cleaned up because a lot of the patients, when we get them from the ED, if they were

> motor vehicle accident that was ejected from the car or something around that situation, sometimes they'll come up there and there's still dirt on the sheets, you know. They don't have the time down there to get them cleaned up. They want to get them up here and get them stabilized. If someone's going to the bathroom on themselves down there that's not their number one priority. Because they're dealing with so much, maybe it would be better if up here we put them in because we have to get them completely clean and then insert it, so that's something that maybe would help.

When the participant was asked if they thought the suggestion could be implemented without affecting patient care, they responded,

> I do. Yeah. It's nice when they come up with one because that's one less thing that we have to do, but I don't think it's something that should be, "Oh, we need to get this in." For TPA patients that start TPA, it has to be put in down there (ED). Those are guidelines we have to follow. But the ones that are motor vehicle accidents, gunshots, stabbing. A lot of them are trauma patients, and that's something that could wait for us to get up here, get them clean, get them settled, get them stabilized, then we can deal with that.

The participant recommended foley catheters be inserted in the nursing unit where the patient will be admitted instead of the emergency room. This suggestion could have the potential to prevent CAUTI. When asked if the idea was taken forward, the participant responded that the suggestion was making its way through the appropriate channels and chain of command, but there has not been a decision from leadership; however, the participant learned that the emergency department might start doing what was suggested.

Foley Catheter Policy and Procedure

The second subtheme under the theme Foley Catheter Care Ruling Text and Realities of Care is Foley Catheter Policy and Procedure. This subtheme is used to identify sections of participants' interviews that referred to the healthcare system and

nursing units' policies and procedures, or ruling text. As the ruling text for the healthcare system, the policy and procedure provide a step-by-step guide to foley catheter care; however, policy and procedures may not be utilized fully by staff. This issue is exemplified by the comment from one participant: "After you do certain things a few times you don't revert back to policies and procedures." Other participants clarified that they would likely refer back to policies and procedures if they have not done a procedure in some time. The policies and procedures for the health care system are readily available and accessible to the nursing team and can be found on the health care system's intranet homepage. The policies and procedures are also available in the electronic medical record (EMR) as a quick reference for nursing team members.

Participants also discussed updates and changes in policy and procedure (or the ruling text) of the health care system. The nursing team consistently reported they were made aware of "updates and changes" through multiple modes by nursing leadership on their unit. One participant stated, "They talk about it in meetings, and they will send it out in emails. They make sure we have a sample of the new products out to learn how it is different. They put posters on bulletin boards." The nursing leaders on the units are responsible for making sure all nurses are aware of the changes and use multiple communication modalities and teaching techniques to reach their audience.

Theme 3: Complex and Dynamic Work Area and Environment of Care

The theme "Complex and Dynamic Work Area and Environment of Care" describes the setting and conditions where the nurses and nurse technicians provide care

to patients. The theme is made up of two subthemes: ICU Characteristics and Patient Condition.

ICU Characteristics

The first subtheme, ICU Characteristics, is used to describe the work and care environment of the intensive care unit. Nurse participants described their work area as dynamic and complex. They can have critically ill patients and more stable patients in the same assignment. One nurse participant stated, “Gosh, we get a wide variety. Our unit is ICU and step down together. You have your ventilated patients and your step down patients who are basically walkie-talkies.” Another stated, “In fact, this night’s kind of weird because I actually have a med/surg patient too. We get a little bit of overflow of everything. We’re just looking for a bed to open up for him. So tonight I have step down, med/surg, and ICU.” Another stated, “We see a lot of different patients. We get neuro patients and trauma patients, a lot of different patients between strokes and spinal cord injuries and brain injuries. Busy. A lot of checking on people every hour, making sure that they aren’t getting worse.” While one of the ICUs has more critically-ill patients, the nurses and nurse technicians on both ICUs have adjusted to the dynamic nature of their patients and their assignments.

Participants discussed their work routines. These work routines were part of the socialization process and part of the ICU care process. These work routines were generally followed by nurses and nurse technicians but had some unwritten rules that were adapted by individual nurses. When asked about a typical day in the ICU, one nurse responded,

> It's never the same, I think. You walk in here some days, you don't know what in the world you are getting into, unless you've had the same patients for a couple of days, then you have an idea what treatment's gonna be like. You walk in, get your assignment, I always get here like 30 minutes early because I like to start looking at my patients. You know, shoot the breeze with everybody, and have a cup of coffee, take a couple of deep breaths. Then you go out and get your report, go in and see the patients, look over the worklist, see what meds you're supposed to give when and where, that's kind of the start of it. Make sure you're keeping your vitals, your fluids are running right, Just doing your tasks or whatever I think. It's a little different every day, in a way.

This description of a work routines was consistently reported by the nursing team participants.

The nurses and nurse technicians work as teams on their assigned units. In the ICU, the patient may be totally dependent on the nurse and nurse technician for their care, while other patients may only need minimal assistance for their care. The patients who are critically ill and ventilated, requiring the most attention of the nurse and nurse technician, will likely also require the assistance of other nurses and nurse technicians on the unit to provide the care in the most efficient manner possible. As one nurse stated,

> It's a good practice because no matter what we work as a team. We have good team dynamics so you don't have to worry about making sure there's a second nurse around for insertion (of the foley catheter) or why and when people first come in and they're critically ill, you have several people in there. We're doing several things at one time and helping one another. I've always had at least a second, even a third, depending on how crippled the patient is you might need extra hands in there. It's a good team dynamic so we work with each other and if we can forecast that we need certain things, if someone's already out there asking the doctor for their orders while you're getting supplies and getting things done kind of thing.

Nurses and nurse technicians were congruent in their discussions about teamwork and working together in the ICU. Nursing team participants also stated that teamwork in the ICUs was better than other places where they had worked including other hospitals, nursing units, and other health care settings.

When discussing their work routines, participants all talked about the handoff that occurs between nurses and nurse technicians at the change of shift. The handoff involves one nurse giving a report to the oncoming nurse about the condition of the patient, any changes that have occurred, and any treatments or medications that might be due in the next shift. Information about whether a foley catheter is in place also prompts discussion about why it is needed and the plan to remove it. The shift handoff is important for the nurse to gather critical information about the patient as well as assess the patient's condition and ask questions of the nurse who has been taking care of the patient. The shift handoff occurs between the nurse arriving and the nursing leaving, the nurse technician arriving and the nurse technician leaving, and at the bedside of the patient. The shift handoff is vital for the continuity of care and includes information about the foley catheter if one is in place, why it is needed, and what the plan is to remove it.

Patient Condition

The second subtheme is Patient Condition. This subtheme describes the condition of the patients in the ICU. Participants specifically spoke about critical patients, stool incontinence, and patients who are alert and cooperative versus uncooperative.

First, participants discussed critically ill patients. One participant stated,

> Our patients that are on ventilators are a lot like this (critically ill, uncooperative). They aren't able to do any of their ADLs on their own. If they are, they won't have a foley unless they're on bed rest for some reason. We're not getting them up to go to the bathroom, or they're not able to use the bedpan for some reason.

Another participant discussed critically ill patients, stating:

> It varies. I mean, we take care of neuro. So we have stroke, a lot of strokes. We have traumas. TBIs. Motor vehicle accidents. Gun shot wounds. Having a gun shot wound differs a lot from having a stroke patient and trying to communicate and access their neuro status . . . We're always checking on them hourly. Or if they're more stable more like every other hour. If they're transitioning to becoming a step down patient if they're not on lots of drugs and stuff. But yeah a lot of vents, sometimes not a lot of vents. It just depends.

Participants also discussed the differences between alert and cooperative patients versus those who are uncooperative. As one nurse described,

> Or it's people being monitored for heart conditions and they're just not stable enough to go onto the floor but they're still alert and oriented and able to care for themselves and use the bathroom when they need to, that kind of thing. There's just certain things that keep them here. I recently had a patient who, the only reason he was here was for bi-pap and the floor here can't take someone who's on bi-pap. Everything else, he was stable, he was able to do for himself, use the urinal, when he needed to, crawl out when he needed to. He certainly didn't need a catheter of any sorts. It definitely depends on the patient and their current condition and how they progress or regress, I guess.

There are also patients who are uncooperative with their care. One participant stated,

> If you have a patient who is confused or something, so we get a lot of older patients up here. Sometimes, they're not as cooperative and to be in someone's private area for an extended period of time is an uncomfortable feeling.

> Sometimes, they're not always the most willing especially if you woke them up in the middle of the night to start spraying or wiping down with something cold, it wouldn't be ideal. So, sometimes the patients themselves aren't the most cooperative.

Another nurse describes the challenge of the population she serves:

> Our patients are up here for a long period of time so they're having tube feedings. Once those tube feedings kick in, a lot of them do have loose bowels and a foley at the same time because they are unconscious so that really makes it hard. We try to clean them as soon as we can if they do have a bowel movement. But that's the hardest part. I feel like up here our patients are up here for such a long time and they do require a foley most of the time. They're either getting diuresis or they are on hypertonic saline so they have to have it for that. Or they just need a foley. We have patients up here that are up here for a month or longer and require a foley. It is just hard. They're in bed, they're going to the bathroom, we try our best but it's . . . hard.

The data about patients they serve helps demonstrate the challenges an uncooperative patient can bring to the nurse and nurse technician even though the patient may not have any control over the situation. The patient may be uncooperative due to their condition or the medical treatment being used to keep them safe and alive. Either way, these patients present additional challenges for the nurses and nurse technicians caring for them.

Participants also discussed stool incontinence in relation to foley catheters. The incontinence of stool among critically ill patients is a major challenge to keeping the foley catheter clean and free of bacteria. As one nurse stated,

> One of the biggest problems and I think one of the reasons our unit in particular is prone to CAUTI is you know, they were giving them tube feedings. They have liquid poop even if we put the rectal pouch on or flexiseal on, those leak. They're

> not always 100% secure or if it's too thick you can use one. And it's going to get on there. I think men have a better chance of escaping a UTI than women, because women, it sits right in there. Sometimes I'll put . . . the foley packs come with that sterile piece of paper that you put under—sometimes I'll go under it like a hammock to try to keep a barrier or I've seen people use wash clothes to keep a barrier if we know they're going to be prone to stooling but then you're like, does that just hold it to it or . . . So it's kind of a catch 22, you don't want the foley catheter sitting in stool, but . . .

The difficulty in managing stool incontinence in critically ill patients demonstrates a formidable risk for CAUTI for patients since the foley catheter is in place, and the natural defenses of the body cannot stop microorganisms and bacteria in the stool from migrating up the urethra and entering the bladder. Women are at considerably higher risk due to the shorter length of the urethra.

Focus Group Interviews

First Focus Group

The researcher performed two focus groups, 2 years apart, with three system-wide leaders who were responsible for CAUTI. These leaders are nurses and are accountable for CAUTI performance. Focus group questions were centered around the themes found in the individual interviews. The specific topics in the first focus group included competency, policy and procedure, updates and changes, engagement, foley care specifics, and foley care documentation.

First, the participants discussed competency. One participant stated,

> Well, they are supposed to have a competency—well, the nurse techs who can insert catheters are supposed to have a class in staff education on foley catheter insertion, maintenance, sterile technique, all that. And then, on the orientation pathway they're supposed to have a place that they're checked off on, they know

> where the procedures are, and they're supposed to have three insertions observed from the preceptor that ensures that they know how to insert a foley.

Along with part of the orientation process for nurse techs, the nurse leaders reported that foley catheter insertion is also part of the nurse techs annual competency program that nurse directors can choose for their staff to complete. The nurse leaders revealed that only the nurses and nurse techs who are certified by their license and the healthcare organization to insert foley catheters would attend the class that reviews insertion, maintenance, and sterile technique. Nurse techs who are not certified by their license or the healthcare organization to insert foley catheters would not attend the class for foley care as this is part of their core training for their license and certification. The leaders reported that the nurse techs would get checked off on foley care during orientation to be sure they were shown the procedure according to the health care system policy and procedure, but that may be the last time that they get validated for foley care. One participant admitted, "Honestly, there are probably people in the system that that's the last time they were validated (on foley care). It's not the system we've set up for design, but we've not really strategically thought about how to capture those people who maintenance but not insertion." The nursing CAUTI leaders admit they may not have a good handle on what the nursing team members are doing with foley care.

Policy and procedure were then discussed in the focus group. The health care system had identified an outside resource that provides the procedures for how clinical skills should be performed. According to these nursing leaders, the procedures are to be considered the source of truth for nurses and nurse technicians related to foley catheter

insertion and care. These nurse leaders also verbalized potential barriers when using these procedures. For instance, one leader discussed how long the procedure could be:

> there are 50 steps on there on how to do it (foley care). So you wonder how many of those steps are combined or overlooked or missed, and at the end of the day, you just get passed or failed audit. So you wonder if they're missing crucial steps because it is so long.

The leaders also acknowledge that the system has a shorter version of the procedure and a competency checklist; however, they also acknowledge that there is not any distinction designated in the procedure or competency checklist to identify the most critical steps? for the nurse and nurse technician. "It's not ranked, it doesn't designate which ones are more important than the other steps." The leaders acknowledge that the different versions, i.e., the full version and the checklist version, are very different. They also acknowledge that the full version is probably not used by nurses or nurse techs because of the length.

Even though the leaders acknowledge limitations with the full text of the procedures, they consider the full procedure for foley catheter insertion and care as the "source of truth" for how the procedures are supposed to be performed by nurses and nurse technicians in the health care system. When asked which procedure and competencies nurses and nurse technicians adhere to, the CAUTI nurse leaders responded that they should trust them, the CAUTI nurse leaders, who review and read the procedures and competencies to develop and put out the correct information. The nurse

leaders stated that if they put out the information, then that is what the nurses and nurse technicians should be following and using as their source of truth.

The nurse leaders also discussed the updates and changes to the foley catheter insertion and maintenance procedure that were part of the annual education and competency for nurses and nurse technicians. The nurse leaders indicated that these updates and changes were communicated to nurses and nurse techs in multiple formats and methods, including computer-based learning, fliers, posters, emails, written out, and with pictures because, as they stated, “the adult learner needs the information in many different ways.” The nurse leaders acknowledge that nursing directors are asked to make sure updates and changes are communicated to staff at meetings and posted in the nursing unit. The nurse leaders also acknowledge that even though the nursing directors are requested to make sure staff are aware, there is not a mechanism in place to hold them accountable for disseminating the updates and changes to their staff. The nurse leaders also acknowledge the lack of opportunity to be able to visit with nurses and nurse technicians while they work to make sure the updates and changes have been communicated and that they are being implemented. Finally, the nurse leaders acknowledged that with the updates and changes that nurses and nurse technicians could become complacent with the updates and changes after a time, due to being overloaded, overwhelmed, or confused about changes, which could result in a backslide in CAUTI performance or reverting to previous procedures that were recently changed.

The nurse leaders talked about the engagement of nursing staff and nursing directors in efforts to eliminate CAUTI. The nurse leaders stated that in order to maintain

performance and to continue to improve, they and the nursing staff need time to dedicate to CAUTI. One of the leaders recalled comments that were shared at a CAUTI meeting: "We don't have enough commitment or time to work on things," and they just attend the meetings when they can. The nurse leaders recalled when they started one of their CAUTI programs, they had really strong engagement from frontline nurses and nurse leaders, but now that engagement has dwindled, and the attention to CAUTI is much less due to shifting priorities within the healthcare system. The nurse leaders stated that they could expect about three months of engagement from nursing units who need to improve CAUTI performance, but then "something else comes along, and CAUTI gets thrown under the bus." The nurse leaders also reported that the level of engagement differs by department because some do not have issues with CAUTI, so they may not engage at all in CAUTI efforts.

To validate the nurse and nurse technician participants' comments, these CAUTI nurse leaders were also asked about foley catheter care and the frequency of care. The nurse leaders verbalized the same frequency of foley care as nurses and nurse technicians, twice a day or once per 12-hour shift. When asked specifically about whether this was twice a day or every 12 hours, the nurse leaders responded twice a day. They were then asked about the potential for long periods of time without foley care if the care was provided at the end of one shift and the beginning of the next, or the beginning of one shift and the end of the next shift. The nurse leaders stated that they believed the foley care was actually being performed more than twice a day due to the needs of the patient, such as stool incontinence. The nurse leaders also reported that they did try to have

designated times for foley care to be performed, such as 10 AM and 10 PM; however, they reported that these times did not ever seem to work out because the designated times were not conducive to the care then they would have to change the times to meet patient needs.

Finally, the nurse leaders were asked about foley catheter documentation. The nurse leaders acknowledged that when a CAUTI is identified, they will go back and review the chart to see if any opportunities for foley catheter care were missed. The nurse leaders reported that they usually find gaps in foley catheter care but felt strongly that the nurses and nurse technicians were providing the appropriate care, just not documenting the care. The nurse leaders stated that the documentation requirements could be demanding for staff and that if they became distracted with another task, it could be hard to identify foley catheter care gaps in the documentation that need to be closed. The nurse leaders stated that they believe the nurses and nurse technicians are aware of what is expected of them, but sometimes the documentation may be inadvertently overlooked. Even when a CAUTI is identified, the nurse leaders report that when performing chart reviews, the nursing director will report foley catheter care was performed as it was supposed to be, but when these nurse leaders review the chart, foley catheter care is documented only once in several days. This lack of documentation indicates lapses in foley catheter care that could be influential in CAUTI prevalence. These gaps in care may represent the opportunities for care that could prevent CAUTI.

Second Focus Group

The same nurse leaders were invited back for another focus group approximately two years after the initial focus group. The purpose of the second focus group was to reconnect with the nurse leaders to identify changes that occurred since the initial data collection. The findings of the first focus group were first reviewed and discussed. The nurse leaders reported that the most striking change was that more engagement by nursing directors in the healthcare system. The nurse leaders also reported that the nursing directors were being held more accountable for their CAUTI performance and for being engaged and involved in the CAUTI processes. One of the nursing CAUTI leaders stated, "the culture around HAIs and especially CAUTI is transforming," and she went on to say, "the nursing leaders and nursing directors are really taking it serious." She continued, "we are now having daily safety huddles that the nursing directors now have to attend, they ask why foleys are not out if it has been in more than three days, and they are doing drill downs (mini root cause analysis) to determine why CAUTI cases develop." She stated that this change in accountability was put in place by chief nursing officers and the chief nursing executive for the healthcare organization. Another of the nursing CAUTI leaders reported several significant changes that have been made. She stated,

> the system has dedicated a physician to HAIs with a 0.8 FTE position that works alongside the nursing team and units to improve processes related to HAIs and HAI performance. We have expanded training and competency programs related to foley catheter insertion and maintenance to the beyond the ICU to include the emergency department, operating room, and other procedural areas where they may be placed by nurses.

This leader further added, “we have changed the practice in the emergency department and the operating room so that foley catheters are not inserted unless necessary.”

Along with increased accountability, one of the nursing CAUTI leaders also reported that the foley care that was being done twice a day had officially been changed to assigned times of 10 AM and 10 PM. She stated, “we standardized the times for foley (catheter) care to 10 AM and 10 PM to prevent large gaps in time between care, and nurses still provide foley (catheter) care between these times if needed, but it has to be done at 10 AM and 10 PM.” The nurse CAUTI leaders also report that the nursing documentation has been revised to be more user-friendly for nurses and nurse technicians to make documentation more streamlined and the care to be provided clearer and easier to understand.

Finally, the nurse CAUTI leaders reported that tube feedings and diarrhea associated with tube feedings have led to an increase in dietary consults, reductions in tube feeding rates (which decreases risk for diarrhea), and more coordination between nurses and physicians regarding tube feedings to try and control diarrhea in an effort to prevent CAUTI. One of the nursing CAUTI leaders stated,

> the nurses will call the dietician when the patient on tube feedings starts to have liquid stools, the dietician will review the patient’s chart and condition and work with the physician and the nurses to develop a tube feeding regiment that provides the nutrition the patient needs to heal and attempts to reduce the number of liquid stools which can contribute to CAUTI.

Ruling Text

The last piece of data collected for this study involved the ruling text itself. The policy and procedure of the healthcare system were obtained by the researcher and used as a reference for observations in relation to insertion, care, and maintenance of the foley catheter. The policy and procedure are the ruling text of the health care system and shape the care provided by the nurses and nurse technicians on the participating ICUs. Additional examples of the ruling text that were identified in this research include competency tools, education, emails, posters, and fliers that are used to communicate changes or updates related to foley care and CAUTI. The healthcare system also has the ruling text in the form of orientation materials and preceptor forms used for new employees, training materials for nurse technicians who are being certified to insert foley catheters, and investigation forms that are required when a CAUTI is identified. These examples of the ruling text are consistent with current guidelines and are congruent with one another in the healthcare organization. All of these examples of the ruling text provide evidence of direction and structure to the way the nurses and nurse technicians care for the patient and interact with each other and other healthcare team members.

Research Question Answered

The research question that guided this study was: *How does the ruling text of the healthcare organization and the ICUs organize the behavior and performance of the ICU nursing team related to CAUTI?* After reviewing the health care system's ruling text concerning foley catheters, conducting one-on-one interviews with nurses and technicians who provided foley catheter care, observing foley catheter care and documentation, and

completing two focus groups with the nurse leaders responsible for CAUTI, the researcher was able to triangulate all data to answer this study's research question.

The ruling text of the healthcare organization and the ICUs drives the actions and care provided by the nurses and nurse technicians for their patients related to foley catheter care and CAUTI. The healthcare organization has a policy and procedure that dictates how foley catheter care should be performed, who can perform it, when it is to be performed, and how it is to be performed. According to the nurse leaders responsible for CAUTI performance, the policy and procedure are the source of truth for the care to be provided. The policy and procedure are consistent with current guidelines. There could be gaps in communication with nursing team members. In interviews with nurses and nurse technicians, the policy and procedure are not frequently referenced unless there has been a change, and then usually just the change is reviewed. The nurses and nurse technicians also acknowledge that not all nurses or nurse technicians strictly follow the policy and procedure for foley catheter care and CAUTI prevention. They shared stories of nurses and nurse technicians who had their own way of performing foley catheter care and how they had to try and deal with this incongruent care. The stories from the nurses varied but each had some level of inconsistency with the ruling text and a break in aseptic technique that could potentially lead to the development of CAUTI. The nurse leaders responsible for CAUTI also acknowledged potential gaps in competency completion especially related to foley care since this was considered part of the basic skill of becoming a nurse technician or nurse, and the requirements for annual competency while extended to

insertion of a foley catheter did not extend to the care and maintenance of a foley catheter.

The ruling text of the healthcare organization provides guidelines for the care of the foley catheter and CAUTI prevention; however, according to the interview data, the ruling text does not totally control the care and the performance of the nurses and nurse technicians. The observations made by the researcher were all consistent with the ruling text of the healthcare organization. The nurses and nurse technicians conveyed stories of fellow nurses and nurse technicians who did not follow the ruling text of the healthcare organization. The nurse leaders responsible for CAUTI also shared that the ruling text was in place to train new employees and make sure they were aware of how care is to be provided but acknowledged that after the initial training, continued training might not be conducted by all nurses and nurse technicians.

CHAPTER V

DISCUSSION AND IMPLICATIONS

Purpose

The purpose of this study was to describe how the ruling text of the healthcare organization and participating hospital system ICUs organize the behavior and performance of the ICU nursing team in relation to catheter-associated urinary tract infection (CAUTI). CAUTI is caused by the placement of an indwelling urinary catheter, or a foley catheter, which bypasses the body's natural defenses and exposes the patient to development of a urinary tract infection. Nurses and nurse technicians, the nursing team, is viewed as responsible for the placement, maintenance, care, and removal of the foley catheter, and therefore the development of CAUTI is considered a nurse-sensitive outcome. Study findings demonstrate that nursing staff, nurse technicians (CNAs) and nurse leaders are aware of the ruling and text and confirmed that ruling text was being followed regarding foley catheter care and documentation. However, the nurses and nurse technicians responsible for foley catheter insertion and care also expressed inconsistency with ruling text, especially in relation to foley catheter care and documentation. These inconsistencies are likely responsible for continued CAUTI in the ICUs of this healthcare system.

This chapter discusses study findings and presents implications for nursing theory, nursing practice, and nursing research. Limitations of the study are also presented.

Discussion

The Importance of Ruling Text

A major finding of this study was that the ruling text of the institution concerning foley catheter care did influence nursing team behavior and performance but did not guarantee consistent behavior and performance. First, this study provides support for the importance of having ruling text that are standardized and easily accessible. All study participants were able to identify what the ruling text was concerning foley catheter insertion, care, and CAUTI prevention as well as where policies and procedures could be accessed. Participants in this study all reported receiving education on foley catheter insertion and care as well as CAUTI prevention in their educational programs. This finding contrasts with a recent evidence-based practice study which was conducted in a large hospital system by Ost et al. (2020) who found that individual hospital units had separate standards of care and policies and procedures varied by unit. The ruling text (policy, procedure, guideline, standards of care, competency validation, competency, and skill check-off) of the hospital system was not standardized or easily accessible. Ost et al. (2020) confirmed that having ruling text that was standardized and accessible was critical for providing quality care.

Even with Knowledge of the Ruling Text Inconsistencies in Care Occur

Study findings document that while all nursing staff were aware of the ruling text concerning CAUTI, not all staff consistently followed proper policy and procedure. Healthcare staff are indoctrinated into the importance of following policy and procedure in all educational experiences. Indeed, all fundamentals of nursing textbooks and nurse

technician educational materials emphasize the importance of following institutional policies and procedures. However, because hospital workers come from diverse experiential and educational backgrounds it is not surprising that inconsistencies were found with CAUTI care in this study. Indeed, the sentinel report from the Institute of Medicine (IOM) in 2000, "To Err is Human" (Kohn et al., 2000) brought national attention to the fact that while the public expects perfection, medical errors happen and healthcare workers are vulnerable to lapsed care. While tremendous efforts have been made since 2000 to enhance patient safety, especially concerning infection control practices, hospital associated infections still occur.

Findings of this study that documents continued inconsistency of care is supported by a systematic review of research literature focused on knowledge, practice and attitude of nurses towards infection control and prevention standards (Nasiri et al., 2019). The authors reported that the findings of 18 studies with a total of over 4,500 participants, nurses reported adequate knowledge of infection control strategies, but overall average to poor compliance with practice of infection control prevention. Participants in these studies recommended more frequent educational training was needed to reinforce infection control practices.

This study documents that one reason for inconsistency of care is that some nurses and nurse techs perform foley care according to their own methods, deviating from the ruling text. While inconsistencies with adherence to institutional policy have been reported with personal safety, such as with proper use of respiratory equipment (Wizner et al., 2018) and even personal safety measures with hazardous chemotherapy drugs

(Colvin et al., 2016), there is no recent research specific to inconsistencies with inserting or caring for foley catheters. Nursing staff and technicians are ethically bound to report errors made by themselves or others, however inconsistencies with providing a policy or procedure may not be deemed true error. Moreover, when nurses are aware of an error made by themselves or others, they are often reluctant to report it for fear of managerial or peer consequences (Mansouri et al., 2019; Yang et al., 2020). The Joint Commission, an organization that accredits U.S. hospitals for quality and safety performance, provides hospitals strategies to assure a "just culture" in organizations to eliminate fear of punishment or repercussion for those who report errors or inconsistences in ruling text care performance (Outcome Engineering, LLC, 2007). "Just culture" is an approach to healthcare safety that focuses on the processes leading to medical errors or hospital acquired conditions instead of blaming one person (Outcome Engineering, LLC, 2007). This study documents the importance of assuring that nurses and technicians are aware of their hospital's just culture with reporting lack of compliance with institutional policy.

Ruling Text, Hidden Text and Care, Root Cause

The ruling text prescribes the foley care the nursing team is to provide and also how to appropriately document care. However, a finding from the one-on-one interviews with the participating nursing team members and through direct observation of the nursing documentation by a team member, documentation appears to hide the text of the care provided and therefore the care provided. Specifically, the documentation does not provide the nursing team the opportunity to document all of the care provided resulting in hidden text or care. This hidden text or care potentially obscures deviations from the

ruling text which may contribute to the development of CAUTI. While the nursing documentation does state what the documentation is supposed to represent, the nursing team does not have an opportunity to alter this representation if different care is provided or a deviation from the ruling text is present including why. Documentation of care provides not only a communication record among healthcare team members but is also essential for protection against personal and institutional liability in the advent of adverse patient outcomes resulting in legal action. While nursing documentation historically was done in pen and paper format, 95% of hospitals in the US now use electronic medical records (EMRs) (Parasrampuria & Henry, 2019). The U.S. Office of the National Coordinator for Health Information Technology (ONC) (2020), documents the numerous advantages to EMRs, to include quick access to patient care records for more coordinated, efficient care, more legible and complete documentation, cost efficiency, and recorder efficiency, especially when check lists are used. However, documentation gaps have also been identified with EMRs. Pagulayan et al. (2018) examined documentation gaps with EMR reporting and disadvantages specific to nursing. Disadvantages include a reduction in nurses' critical thinking skills, use of workarounds to bypass required documentation and errors with documentation. These researchers suggest the use of EMR nurse champions to continue to educate nurses, perform EMR chart audits to identify missed documentation, and to report feedback to nursing staff to improve nursing documentation.

The conflict between hidden text or care and efficient nursing documentation is a problem which will have to be resolved by the healthcare organization and nursing

leadership about which strategic priority is more important: potential identification of accurate CAUTI root causes or more efficient nursing documentation which hides text or care. The conflict between these strategic priorities would require additional studies to determine if more accurate documentation resulted in more accurate root cause identification for CAUTI cases and studies to determine how much more accurate documentation impacted patient care, patient outcomes, nursing satisfaction, and nursing outcomes. The ruling text of the healthcare organization would need to be changed to reflect the strategic priority chosen and the policy, procedure, protocols, and processes to ensure the strategic priority is achieved.

Ruling Text Relationship to Nursing Behavior and Performance

From the time nursing team members enter into training to become nurses or nurse technicians they are introduced to ruling text. They are further exposed to ruling text when they enter the workforce as a nurse or nurse technician. They continue to be exposed to ruling text with annual competencies, updates to policy, procedure, protocols, processes, and products. This study found that while the nursing team members are aware of these texts and attempt to follow them, they do not consider them ruling text. Participants verbalized an understanding that the ruling text were to be followed as rules but did not appear to have an understanding about the relationship of the ruling text and their nursing behavior or performance, or the concept of the ruling text as an influencer of the nursing team's behavior and performance.

Nursing leader participants also expressed views of the ruling text as tools to ensure that nursing team members were properly trained, competent, and updated on

changes to policy, procedure, protocols, processes, and products. These CAUTI nursing leaders also expressed an expectation that nursing team members will follow the ruling text to ensure care is consistent and the appropriate care is completed by the nursing team. Significantly, the CAUTI nursing leaders did not verbalize any knowledge of ruling text or that the ruling text influences the nursing team's behavior and performance.

The above findings appear to be a semantic difference between the terms ruling text and policy/procedure. However, the term ruling text is broader than the terms policy/procedure. Ruling text encompasses how social institutions and the people in them function and how the rules of the institution organize and influence the people within the social institution. Policies and procedures are rules and instructions for performing tasks typically in a business setting. The ruling text helps institutional ethnographers develop a better understanding of social institutions and the people who make them up. Further education of nurses, especially nurse leaders in hospital systems about the importance of connecting "ruling text" to policies and procedures may encourage adherence to institutional policies, thus assuring the highest quality of patient care.

Gaps in Training, Performance, and Competency

Possible gaps in training, performance and competency concerning CAUTI prevention were identified in this study. Study participants stated that they received training in foley catheter care in nursing school, upon hire, and at least annually with competencies. However, when talking with CAUTI nursing leaders, they revealed the ruling text allowed some gaps in competencies as nursing unit leaders could pick the competencies for their nursing team and did not have to pick competencies related to

CAUTI. They also shared foley catheter care was not one of the competency options for nursing leaders to choose from. The CAUTI nurse leaders verbalized that foley catheter care was a basic skill for the nursing team and once they were found competent upon hire there was no further need for the nursing team to complete the foley catheter care competency. This data also contradicts data obtained from nursing team members who reported deviations from the ruling text by their peers. These deviations from the ruling text could be potential causes of CAUTI. Clinical competency and assurance of nurse and technician awareness of hospital policy, especially in relation to prevention of hospital acquired infection, is critical for any hospital system or institution. This study documents a lack of consistency with assuring these competencies in relation to CAUTI prevention. One suggestion to standardize training is to require yearly simulation activities related to foley catheter care insertion and care. A plethora of research demonstrating the effectiveness of simulation for nursing education; in further support, a synthesis of the research literature by Shin et al. (2015) indicates that simulation training is more effective than traditional learning methods for nursing staff.

Finally, an additional gap in the ruling text was related to the timing for foley catheter care. The ruling text as reported in the one-on-one interviews and observed in the ruling text, called for foley care twice a day by the nursing team. Because most nursing team members work 12-hour shifts, the time of foley catheter care by the nursing team potentially allowed for this care to be spaced out for periods longer than 12 hours and potentially up to 22-24 hours. This potential gap in care is created by the ruling text because the ruling text was not specific enough. While this gap was corrected after it was

identified in the first focus group with nurse leaders (care was now prescribed for 10:00 am and 10:00pm), it does point out that ruling text can inadvertently create gaps in care that resulted in the increased prevalence of CAUTIs in these ICUs.

Study Implications

Implications for Nursing Theory

This research study used institutional ethnography as a conceptual framework and methodology. Institutional ethnography is a novel approach in nursing and health system research. Institutional ethnography guided the researcher to collect a variety of data utilizing ethnographic methods. These ethnographic methods allowed for the collection of detailed data related to nursing team behavior and performance in the ICU related to CAUTI that would not have been identified through data collection via one single approach (chart audits, interviews or observations). This detailed mixed-method collection strategy provided the researcher with a more detailed understanding of nursing behavior and performance in relation to the ruling text of the healthcare organization and the ICUs.

The use of institutional ethnography as a conceptual framework and methodology also has the potential for further nursing theory development related to the understanding of the social settings of nursing teams, the relationship between nursing leadership and the nursing team, and the influence of the nursing team on the ruling text. Institutional ethnography also offers the opportunity further nursing theory through the exploration of power relations between the nursing team and nursing leaders, nursing and healthcare organization leadership, and nursing team and physicians. These opportunities can be

realized through the use institutional ethnography as a conceptual framework and methodology for additional studies that can reduce adverse patient outcomes and improve patient care safety and quality.

Implications for Nursing Practice

The data and findings from this research study suggest that the nursing practice related to foley catheters by the nursing team in the ICU could be improved by ensuring nursing team members fully comply with the ruling text to include policies, procedures, protocols, and guidelines to prevent CAUTI. Despite the numerous CAUTI-prevention tool kits that are widely available, a recent cross-sectional study of six hospitals found that lapses in catheter care protocols are still one of the most common contributing factors for CAUTI (Leticia-Kriegel et al., 2019). More emphasis must be placed on complying with the ruling text concerning CAUTI-prevention in ICU units. The nursing team must be encouraged to have conversations with peers when deviations from the ruling text are observed and conversations with nursing leadership if the deviations from the ruling text continue. This is supported by Quinn (2015) who conducted a root cause analysis with nursing staff specific to CAUTI and affirmed that it is imperative that nurses report any barriers or breaks in protocol related to a care procedure. Peer-to-peer communication is important for assuring policies are properly followed.

Findings from this study support that nursing leadership assure competency with patient care policy and procedures, especially in relation to hospital acquired infection. If nursing leadership is responsible for assuring competencies, such as the policy in the study hospital system, they must also be encouraged to perform direct observations or

participate in foley care with staff in order to observe for deviations from the ruling text and address the deviations if observed. Simulation activities specific to CAUTI prevention are also recommended.

This study supports the need for EMR systems that provide essential documentation in relation to foley catheter care and CAUTI prevention. Documentation should be in one place versus different places in a patient record. Poor documentation systems allow for hidden text, or worse, hidden care potentially exposing staff or a hospital system to liability. Additionally, without accurate documentation of a nursing team's performance, nursing leadership has difficulty in identifying the root causes of CAUTI within a unit or hospital system.

Finally, this study supports the need for a strong "just culture" within hospital organizations. Hospital staff must feel free to report errors and inconsistencies with care performance, especially when they put the patient at risk for infection or an adverse outcome. Since *To Err is Human* (Kohn et al., 2000) first exposed the number of medical errors that occurred in patient care, hospital systems have worked hard to improve healthcare safety through system improvements. A just culture that emphasizes the need to educate versus punish healthcare worker error will enhance healthcare systems' efforts in reducing error and improving care quality.

Recommendations for Nursing Research

Data for this study were obtained from two ICU units within one hospital system. It is recommended that this study be replicated in additional hospital units and other healthcare systems. Further exploration of the ruling text impact on nursing teams and

nursing leadership also needs to be explored. Future nursing research must include study of power relationships between nursing teams and nursing leadership and nursing leadership and healthcare organization leadership to ensure that ruling text is understood and followed by team members.

Despite being a system that is governed by policy and procedure or "ruling text", this study documents that the term "ruling text" is relatively unknown in nursing. Future nursing research should include the development of ruling text for nursing teams and how this occurs, what impact nursing teams can have on ruling text, and what effects the ruling text may have on the sociological aspects of the nursing team and healthcare organization including teamwork, cohesion, and overall performance.

Finally, this research demonstrates how an ethnographic analysis of ruling text and nursing performance identified gaps in nursing care performance and documentation that may be contributing to continued CAUTI within the ICU setting in this health system. Further research is needed on how the ruling text be used as a tool for nursing empowerment and engagement to improve CAUTI and hospital associated infection performance as well as the overall performance of the healthcare organization and nursing teams.

Limitations

As a qualitative study, the first limitation is the study design itself. This study design is still relatively new to nursing research which may limit data, findings, and implications. The purpose of this research was to illustrate how the ruling text influences nursing behavior and performance related to indwelling urinary catheter insertion and

care in relation to CAUTIs in two ICU units in one health system. This illustration may not contribute to new knowledge generation or knowledge, which is transferrable to other nursing settings but may lead to improvements in care at the participating healthcare system.

Another limitation of the study is the small number of participants, observations, interviews, focus groups, short timeframe for observation, and participating nursing units, as this may not be comprehensive enough to fully describe the reality of the nursing team's performance related to CAUTI. The nursing units and nurses involved in the study were ICUs making this a potential limitation. However, the ICU is a vital area for this research since patients in the ICU may be more at risk for CAUTI since their condition is often medically complex and critical.

The observations by the researcher may also be another potential limitation as participants may have done their best to follow policy, procedure, and/or guidelines at the time of observation so as not to be out of compliance with the healthcare system's policy, procedure, and/or guidelines. The nursing team may have been fearful that the observations could potentially identify the nursing team member and a deviation from the healthcare system's policy, procedure, and/or guidelines even though the researcher assured the nursing team their identities would be protected and not revealed to unit management. The research also assured the nursing team the observations were not focused on compliance with policy and procedure but to understand what is actually occurring when care is provided.

Finally, the location of the study is a limitation; the hospitals participating in the study are smaller community hospitals which are part of a healthcare system in one geographic region of the Southeastern U.S. Each hospital and each nursing unit in this study differ related to the patient population, staffing, and local practices and rules.

Despite the limitations of this study, potential benefits include a clear description of indwelling urinary catheter care and insertion, a better understanding of the influence of the ruling text on nursing performance and behaviors, and identification of key behaviors and performances that can improve nursing care and CAUTI performance.

Conclusion

This study's findings inform changes in nursing practice in the ICUs related to prevention of CAUTI. These changes include improved peer to peer communication when care deviates from the ruling text, increased nursing leadership involvement to ensure ruling text is complied with, EMR documentation that accurately reflects the care provided and allows for identification, tracking, and trending of ruling text deviations, use of simulation for training and competency evaluation, and increased efforts by the healthcare organization and nursing units to implement a "just culture." These recommended changes for nursing practice have the potential to improve ICU CAUTI performance, nursing team engagement, and patient safety in the ICU.

This study used institutional ethnography as a conceptual framework and methodology to examine CAUTI in the ICU and the influence of the ruling text on the nursing team. Study findings point to the need for future nursing research to replicate this study. The use of institutional ethnography in future research offers the opportunity for

further understanding of topics important for quality of care and patient safety from a sociological perspective.

While this study has limitations, the study has contributed to nursing knowledge and nursing science by describing how the ruling text influences the behavior and performance of the nursing team in the ICU setting related to CAUTI, making recommendations for nursing theory, nursing practice, and future research needs, and demonstrating that institutional ethnography has the potential as a conceptual framework and methodology to make further contributions to nursing science.

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APPENDIX A.

INTERVIEW GUIDE FOR NURSING TEAM

Nursing Team Member Interview Questions following Observation

1. Can you tell me about being a student or new nurse and learning how to perform indwelling urinary catheter insertion and indwelling urinary catheter care?
2. Can you describe a typical day in the ICU for you? Can you describe inserting an indwelling urinary catheter and/or catheter care? Do you typically perform this work alone or with assistance? Please describe.
3. Can you describe the general condition of patients in your ICU? When you are performing peri-care or catheter care, what are some of the challenges or issues that can be commonly seen among these patients?
4. How do you know what type of indwelling urinary catheter to insert or catheter care should be performed for each patient? Are there any forms or guidelines which guide your care? Where are these located? How often do you review these? How do you know if there have been any changes in these documents or forms?
5. Where do you document the indwelling urinary catheter insertion or catheter care you provide? Do you think these forms accurately reflect the work that you provide? What could be improved about these forms and documentation?

6. What do you think the biggest issues around CAUTI are? What changes would you like to see around indwelling urinary catheter insertion or care?
7. Is there anything else you would like to discuss around indwelling urinary catheter insertion or care for patients in the ICU?

(Dale, 2013)

APPENDIX B.

INTERVIEW GUIDE FOR NURSING LEADERSHIP FOCUS GROUP

Nursing Leadership Focus Group Questions

1. Please tell me your title and your responsibilities related to the ICU and CAUTI.
2. Please tell me about indwelling urinary catheter insertion or care in the ICU setting. How do you ensure staff are providing care as they should be, starting with new hires all the way through nurses with 5 or more years of experience? How are staff kept up to date about changes to policy/procedure/guidelines related to indwelling urinary catheter insertion or care?
3. Nursing policy, procedure, and guidelines for indwelling urinary catheter insertion, care, and maintenance exist. Where are these forms located, and do all nurses have access to them? Are other members of the health care team expected to complete or participate in indwelling urinary catheter insertion or care?
4. How do you know if nurses have completed the catheter care as required? Do you feel these forms accurately capture all of the care being provided by the nursing team?
5. What do you think the biggest issues around CAUTI are? What changes would you like to see around indwelling urinary catheter insertion or care?

6. Do you think the health system has implemented all of the best practice recommendations to prevent CAUTI? What barriers or challenges are remaining to implement any remaining best practice recommendations?
7. What do you think of the nursing teams in the ICU related to their performance of indwelling urinary catheter insertion or care? What would be the greatest single item you would change if you could?
8. Is there anything else you would like to discuss around indwelling urinary catheter insertion or care in the ICU?

(Dale, 2013)